CHINESE PREHISTORY IN PACIFIC PERSPECTIVE: SOME HYPOTHESES AND PROBLEMS [1]

KWANG-CHIH CHANG 張光直

HARVARD UNIVERSITY

INTRODUCTION

In the last decade such a vast amount of archaeological materials has been brought to light in China with such bewildering rapidity [2] that one who tries to make a synthesis of Chinese prehistory from the present state of our knowledge is taking a risk. However, many students of the Pacific anxiously demand and await at least a recapitulation of information now known about the prehistory of the Chinese, information without which many problems lying outside of China simply cannot be solved. One of the classic problems is the origin of the Malayo-Polynesians,[3] whose hypothetical homeland, South China, is still taken for granted by many people to be a blank area in archaeology. Americanists, on the other hand, are longing to know more about the possible Asiatic prototypes of their Woodland Pattern complex,[4] certain ceramic types,[5] and so forth. Furthermore, recent ethnological researches have indicated a pan-Pacific culture pattern, of which China was one of the earliest centers.[6] In order to seek for information on their particular interests in the realm of Chinese prehistory, students of the Pacific areas are confronted with a variety of viewpoints, printed in English and French in a number of articles, which are unfortunately so fragmentary as to be of little use or so conflicting as to defy reconciliation.

The present paper attempts to present some generalizations on Chinese prehistory, interpreting facts known to date and reconciling some of the suggested viewpoints. The author wishes to stress equally the settlement-reconstruction approach [7] and an attempt at historical reconstruction, with emphasis on the former, to work out regional sequences and local cultures before making continental comparisons, and to examine the bearing of Chinese

prehistoric cultures on cultural and historical events elsewhere in Pacific areas.

Mesolithic Hunter-Fishers

Little is known of the environmental changes of North China during late Pleistocene and post-Pleistocene times. One can surmise, however, that during the latest Pleistocene, loess was deposited over North China and that the climate was semi-arid and cool; that since the beginning of the geological Recent there was a period of Panchiao erosion [8] and the climate rose in temperature and became moister until a few millennia ago; and that during the " climate optimum " of the post-glacial period a considerable part of the North China plains and plateaus was covered by dense forest and parkland which subsequently disappeared because of climatic and human agencies. Although the climatic cycle of post-glacial North China remains to be determined,[9] it is fairly certain that the vegetation cover over North China was once much thicker until probably the Neolithic period when men began to deforest efficiently with polished stone celts, a process more or less running parallel to the climatic decline, as was the case in prehistoric Europe.[10] The presence of a moist environment, consisting of a warmer climate, a thick forest covering, marshes and swamps, in North China during prehistoric times is indicated by several lines of evidence. The first is a direct one, consisting of remains of wood in great quantity. For instance, quantities of charcoal have been discovered at every Neolithic and Bronze Age settlement; remains of wooden beams were left at Yang-shao-ts'un 仰韶村; [11] wooden coffins encased in wooden chambers were used in the Shang-Yin dynasty; and wooden vessels can be assumed from their bronze skeuomorphs at An-yang 安陽.[12]

The second line of evidence for climatic conditions consists of implements for wood-felling (axes) and wood-working (adzes, chisels, antler wedges), which are abundantly seen at almost every prehistoric site. A third line of evidence is the faunal and floral remains uncovered from Neolithic and early Bronze Age sites. The following species of animals, now living in South China or more southward and almost completely extinct in North China

today, can be enumerated from Recent deposits and early dwelling and mortuary sites: *Rhizomys troglodytes* (Yang-shao-ts'un and An-yang), *Elephas indicus* (An-yang), *Rhinoceros* sp. (Ma-chia-yao 馬家窰), *Bos namadicus* (Ma-chia-yao), *Tapirus* cf. *indicus* (An-yang), *Bubalus indicus* (San-ho 三河 peat), *Bubalus mephistopheles* (An-yang), *Hydropotes inermis* (San-ho, Ch'eng-tzu-yai 城子崖, An-yang), *Elaphurus davidianus* (San-ho, Hung-chia-lou 洪家樓), *Elaphurus menziesianus* (Ch'eng-tzu-yai, An-yang), and the porcupine (Peiping).[13] In addition, shells of the heat-loving species, *Lamprotula tientsiniensis*, L. *rochechouarti* and L. *leai*, have been unearthed from Tientsin muds and the Neolithic site at Ch'eng-tzu-yai.[14] The presence of elephants and rhinoceroses is further confirmed by finds of their images and by literary sources.[15] All such evidence seems to suggest that prehistoric North China was ecologically different from that of today, more foresty, moister and warmer.

But above all, it was the common deer (*Cervus*) that was extremely abundant and vitally important in prehistoric North China. Bones of its various species have been found at many Neolithic and Bronze Age sites; its bones and antlers were made into numerous kinds of implements; its scapulae served for divination purposes; and it was probably killed with stone and bone arrowheads and skinned with stone knives and scrapers, remains of which are abundant at every prehistoric site. This animal may also have had some ritual value as indicated by the deer burials in the Pan-shan 半山 Hills and at Pu-chao-chai 不召寨.[16] The importance of deer in the life of ancient people in North China is also indicated by the survival today of such expressions as " common as deer" (鹿鹿), " to chase deer" (逐鹿; i. e., " to pursue power"), and " by whom the deer is killed" (鹿死誰手; i. e., " see who wins the competition"). Numerous place names in North China contain the morpheme " deer," further indicating the past abundance of deer herds and their importance in ancient life, both evidence of the proximity of extensive woodlands to the settlements of ancient North China. The floral remains that indicate a warm climate in this region consist of rice and bamboo, the former having been found at Yang-shao-ts'un[17] and the latter

suggested by the use of a ring-foot (stemmed foot) form in the pottery of the Lungshan Culture.

A fourth line of evidence is the location of Mesolithic and Neolithic settlements, many of which are found near ancient water courses now completely dried up. A classic example is Yang-shao-ts'un, which is now atop a plateau lined with steep ravines but was in prehistoric times situated close by a water course flowing approximately at the level of the plateau.[18] In Mongolia both the Central Asiatic and the Sino-Swedish Expeditions established the fact that in Mesolithic and Neolithic times there existed a belt of oases extending all through the present steppe and desert regions, since the sand dunes on which artifacts were collected "occurred with such regularity in the various basins and hollows as to suggest their formation having taken place when great and small lakes existed."[19]

A last line of evidence consists of the so-called Black Earth stratum in eastern Inner Mongolia and Manchuria, which has often been considered to be "final Pleistocene." The most instructive deposits are those at Lin-hsi 林西 and Ang-ang-hsi 昂昂溪, investigated by Liang Ssu-yung 梁思永, where a dark sandy deposit layer lies between the Late Pleistocene sandy loess and the upper yellowish sandy layer formed under climatic conditions no different from those of the present.[20] This Black Earth layer, containing a variety of Neolithic artifacts and presumably deteriorated organic remains, seems to indicate the former existence of a thick vegetation cover over this whole area.

Considering all these lines of evidence, we may with some safety assume that in North China the post-Pleistocene climatic curve seems to be reflected in general by a vegetation curve, rising from semi-barren to thick woodland and then falling again partly because of human clearance. The curve was undoubtedly irregular and there were presumably minor oscillations, but a rising-falling curve appears to represent the major trend.

Dwelling after the Ice Age in the environment just outlined, in oases or along forest borders, were the North China Mesolithic hunter-fishers, apparently a group of inhabitants carrying on the Upper Palaeolithic Fenho-Ordos flake-and-blade tradition but ad-

justed to the changed ecological conditions as indicated by the widespread appearance of the micro-blade tradition.[21] Their remains have been unearthed at several localities in North China. The Upper Cave of Chou-k'ou-tien 周口店 seems to mark the earliest beginning of the Mesolithic culture as indicated by its faunal remains, which include surviving Pleistocene species.[22] Much later phases have been substantiated by Shabarakhusu in Outer Mongolia,[23] and at Ikhen-gun, Gurnai, and Sogho-nor in Inner Mongolia,[24] Djalai-nor and Ku-hsiang-t'un 顧鄉屯 in Manchuria,[25] and the recently located Sha-yüan 沙苑 region in Chao-i 朝邑 and Ta-li 大荔 *hsien* in Shensi.[26]

All these represent seasonal settlements of Mesolithic woods-lake-oasis hunters and fishers. The imperishable part of their culture consisted of flakes and micro-blades, bone points and harpoons and ornaments made of stone, bone, mollusca shell and, notably, ostrich eggshell. An inventory of their stone tools includes scrapers, awls, points, rectangular and semi-lunar knives at all localities and at some settlements, arrowheads, all chipped or pressure-flaked from flints, quartzite, and chalcedony and small cores and flakes for mounting in bone handles. They hunted wild game, above all deer, and birds in woods and swamps with bow and arrow and fished in swamps and lakes with bone spears, harpoons, and possibly nets.

The ecological conditions in early post-Pleistocene times south of the Yangtze River have been little investigated, but the existence of tropical and sub-tropical forests and a warm, moist climate may be presumed. Mesolithic cultural remains have been discovered only in the Southwest, in caves or under rock shelters in Kwangsi [27] and Yunnan [28] and in the open in the Red Basin.[29] Presumably left by hunter-fishers and collectors, they consist of thin charcoal layers and chipped-pebble implements and are characterized by the notable absence of the micro-blade tradition. Some of the stone implements have been labeled Hoabinhian hand-axes, following the terminology used for similar artifacts in northern Tonkin, but whether there was a uniform culture throughout southwest China and southeast Asia remains to be determined.

The Neolithic Revolution in the Huangho Valley

Sometime, somewhere in the Middle Huangho the Neolithic revolution took place; but since a considerable gap exists in our knowledge between the known Mesolithic cultures and the earliest known Neolithic cultures, we know little, if anything, of its details. Significant are the distinctive style of the Chinese Neolithic and the continuations from the Mesolithic into the Neolithic. It would not be surprising if future explorations produce a complete sequence in the Middle Huangho of the change from food-gathering into food-producing. By " Middle Huangho " I refer to the fertile land in southern Kansu, middle Shensi, southern Shansi, and western and northern Honan, drained by the Huang, Wei, Ching, Lo, Fen and Upper Han Rivers. The area around the confluence of the Huang, Wei and Fen Rivers is the most important in North China prehistory and may be referred to as the North China Nuclear area.

Some continuations from the Mesolithic are obviously ecologically determined; e. g., the heavy dependence on woodland and on wild deer. But others are more significant in that they represent a continuation of style. These include, for instance, the occurrence of microblades, other microliths and chipped stone implements in some Neolithic settlements, especially Yang-shao-ts'un and Shan-hsien 陝縣 in western Honan,[30] Hsi-yin ts'un 西陰村 in southern Shansi,[31] and Liang-ch'eng-chen 兩城鎮 in coastal Shantung.[32] Other such continuations are the semi-subterranean dwelling, which was common to the whole circumpolar zone of the Upper Palaeolithic period, and triangular arrowheads, prismatic points, and polished rectangular and semilunar stone knives which carried on the tradition of the Mesolithic scraper.

I propose to call " Incipient Neolithic " [33] the first cultivators who still practiced hunting and fishing to a great extent, " Early Neolithic " the full-time cultivators who shifted their settlements from one locality to another when the fields around the old one became exhausted, and " Late Neolithic " the full-time cultivators residing in permanent settlements, which were, as in the Early Neolithic, self-contained village communities. In North China

the earliest known cultivators are the already full-time Early Neolithic ones, but only the later stages of this Early Neolithic have been archaeologically substantiated, despite the fact that the culture of the previous periods can sometimes be postulated on a firm basis.

The North Chinese farmers of this Early Neolithic stage, customarily called the Yangshao or "Painted Pottery" Culture, raised a variety of crops. Whether these included root crops such as the taro, we still do not know. Remains of Early Neolithic crops consist entirely of cereals, including foxtail millet (*Setaria italica* Beauv. var. *germanica* Trin.) found at Pan-p'o 半坡 (Sian), Tou-chi-t'ai 鬥雞臺 (Pao-chi 寶雞), and Liu-tzu-chen 柳子鎮 (Hua-hsien 華縣) in central Shensi [34] and Ching-ts'un 荆村 (Wan-ch'üan 萬泉) in southern Shansi; [35] broom corn millet (*Panicum miliaceum* L.) found at Ching-ts'un; [36] grand millet or kaoliang (*Andropogon sorghum* Brot.) also found at Ching-ts'un; [37] rice (*Oryza sativa* L.) at Yang-shao-ts'un; [38] and possibly wheat at Wang-chia-wan 王家灣 (Pao-te 保德) in Shansi.[39] Of these, the foxtail millet and broom-corn millet were probably the most important, and the former plant is considered by botanists to have been domesticated in the North China region. These plants were cultivated with hoes and spades, stone specimens of which have been widely unearthed, and probably with digging sticks, possible weights of which in the form of perforated stone discs have also been found in considerable quantity. The fields were cleared with the aid of polished stone axes, which are often oval in cross-section. The plants were harvested with polished rectangular and semilunar stone knives, fastened to the hand with a string or leather rope through a hole or around two side notches. The grain was consumed, stored in pottery jars, or ground with manos and metates or with pestles and mortars. Manos and metates were presumably also used to grind wild seeds, such as those of the common weed, *Setaria lutescens*, remains of which have been found at Ching-ts'un.[40]

Hemp was probably cultivated [47] and silkworms (*Bombyx mori*) were raised, a half-cut cocoon of the latter having been found at Hsi-yin-ts'un in southern Shansi.[48] Hemp, silk, and possibly other

fibers were spun with the aid of stone and pottery spindle-whorls and woven into cloth. Eyed-needles of bone served to sew them into garments. Dogs and pigs were raised extensively, their bones having been unearthed at Ching-ts'un [41] and Kao-tui 高堆 [42] in southern Shansi, at Lo-han-t'ang 羅漢堂 in Chinghai,[43] and at Yang-shao-ts'un [44] and Kwang-wu-hsien 廣武縣 [45] in Honan. Slightly less common were cattle, whose remains have been found at Ching-ts'un, Kao-tui, and Kwang-wu, and sheep and goats, found at Ching-ts'un and Lo-han-t'ang.[46]

Wild game and fish supplemented the diet. Bones of a variety of wild animals have been recovered from the middens of Early Neolithic settlements: the horse (Kao-tui), leopard (Ching-ts'un), water deer (Ching-ts'un), wild cattle (Ma-chia-yao), deer (Ma-chia-yao, Lo-han-t'ang, Kwang-wu), rhinoceros (Ma-chia-yao), bamboo rat (Ma-chia-yao), antelope (Lo-han-t'ang), hare (Lo-han-t'ang and Kwang-wu), and marmot (Lo-han-t'ang).[49] These inhabitants of the woods and steppes were taken by Early Neolithic hunters and hunting parties with the aid of spear, bow and arrow, sling, and, possibly, trap and pit-fall. Birds were also hunted with sling stones or round-headed bone arrowheads, the latter having been found at Pan-p'o, Sian.[50] The importance of fishing is shown by the abundance of bone fish-spears, bone harpoons, bone fishhooks, and net sinkers of grooved pottery and stone. At Pan-p'o, fish and fish nets were favorite decorative motifs [51] and at Ch'ih-kou-chai 池溝寨 in Kwang-wu, Honan, fish bones are particularly abundant.[52] Doubtless hunting and fishing varied in importance according to the local environment of the settlements.

There are indications that the village settlements of Early Neolithic farmers were shifted from one locale to another after a short period of occupancy, that some favored locales were occupied repeatedly, and that the shifting and repetitive settlement pattern probably resulted from the slash-and-burn technique of cultivation: (1) careful and intensive excavations of Early Neolithic village sites have revealed that these villages were of comparatively small size and short duration. Pan-p'o-ts'un, the only Yangshao village that has been completely excavated, is only

200 m. by 100 m. in dimensions.[53] Other comparatively reliable measurements of village size, e. g., of the Lo-han-t'ang, Hou-kang 後岡, Chu-chia-chai 朱家寨, Ma-chia-yao, and Lo-ning-hsien 洛寧縣 sites, do not as a rule exceed two hundred thousand square meters. (2) The deposits of the Yangshao villages, often very thick, usually consist of multi-occupational remains. Three components are seen at Ching-ts'un in Shansi; four components at Pan-p'o; several components at Liu-tzu-chen, Hua-hsien in Shensi [54]; more than six components at Sun-ch'i-t'un 孫旗屯 near Loyang; five components at Miao-ti-kou 廟底溝 in Shan-hsien; [55] three components at Ch'ing-t'ai 青台 in Kuang-wu-hsien; and four components at Lin-shan-chai 林山砦 near Chengchow, Honan.[56] This fact apparently indicates that the Yangshao settlement sites were occupied discontinuously and repetitively. (3) In the same archaeological region Early Neolithic sites are widely distributed over a vast area and each component consists of remains that show no marked changes in typology through time. In 1952 and 1953, twenty-one Yangshao stage sites were located in the vicinity of Sian, Shensi, about which the surveyors made the following remarks: " The Yangshao sites are many and widely distributed. Remains at a single locality are chronologically simple and neighboring localities can easily be given a relative dating on their respective artifact inventories." (Author's translation)[57] At Miao-ti-kou, Shan-hsien, Honan, similar phenomena have been recorded.[58] These indications, taken together, convincingly point to the conclusion that the Yangshao settlement pattern was characterized by shifting and repetitive occupations. Such a conclusion is not in agreement with the impression of most previous students, who have seen the Yangshao villages rather as large, sedentary communities (e. g., Yang-shao-ts'un: 243,000 m^2, Wu-lou 五樓: 550,000 m^2, Ching-ts'un: 7 by 1 miles).

We are now able to suggest that this impression is more apparent than real and is based on at least two sources of error. First, most of the large Yangshao stage sites were measured in a preliminary manner during a survey or during survey excavations. Thus, it seems likely that the large volume of Yangshao remains represents discontinuous occupations which the surveyors or the

excavators failed to recognize. Second, granted that the measured village site represents one component, that is, a single-occupation village, these sites were of the very latest Yangshao stage which had already begun to show changes toward the next stage, e. g., the Yang-shao-ts'un site itself. All in all, the Early Neolithic Northern Chinese were probably slash-and-burn cultivators, shifting their settlements from one locality to another once in a certain period of time and returning to the old site when the surrounding fields, which had been exhausted, recuperated.

Their settlements were of a year around type, and they lived there in village communities.[59] The village consisted of a dwelling area, where houses, pottery kilns, and storage granaries were situated, and a cemetery. In Kansu a large cemetery, the Pan-shan Hills, was presumably shared by a number of residential hamlets, of which Ma-chia-yao was one,[60] and at Pan-p'o, children were buried in urns among the dwelling huts.[61] The inhabitants lived in semi-subterranean circular or oval huts or above ground in circular huts or rectangular long-houses, all of wattle and daub construction with clay or lime plastered floors. In the center of the circular hut and in each house-compartment of the long-house was a hearth, and nearby were a number of storage pits.[62]

There are only faint indications of the community pattern of the Early Neolithic farmers. The long-house at Pan-p'o, Sian,[63] the circular plan of the rectangular house hamlet at Lin-shan-ch'ai, Cheng-chou,[64] and the clustered pit house groups at Sun-ch'i-t'un, Loyang,[65] suggest planned and segmented village patterns; and on these and other grounds, lineage and clan types of kinship grouping have been postulated.[66]

Dead adults and, sometimes, children were inhumed in amorphous pits in extended or flexed posture, singly or in groups in the village cemetery.[67] A belief in an after life is indicated by the utensils and stored food buried with the dead. In the Kansu area, pottery painted with the color of blood (red) and decorated with the so-called " death patterns " has been found particularly in funerary association.[68]

Other than the mortuary rituals, there are only some traces of fecundity rituals, suggested by a variety of decorative motifs

on pots,[69] possibly intended to increase the fertility of fields, and traces of the rites of deer sacrifice, involving the most important game hunted.[70] Certain types of miniature vessels exist which may have had some ceremonial purpose. Finally, a sort of cryptic magic is indicated by numeral indications consisting of incised parallel lines on artifacts from Lo-han-t'ang.[71]

Turning to the Early Neolithic farmer's technological achievement, we have considerable data on their ceramics and their stone, bone, and antler industries. Stone implements were polished, pecked, and chipped. The most frequently found types are axes and adzes with a cylindrical body or an oval or lentoid cross section,[72] used for cutting down trees and for carpentry; hoes and spades with flat bodies and often with a hafting portion, used in cultivating the fields; chisels for carpentry and possibly wood carving; rectangular knives with a central hole or two side notches for weeding, harvesting, skinning, and scraping; and arrowheads for killing wild game. Other stone artifacts include net sinkers, stones for mealing, grinding and polishing, and spindle whorls, etc. Ornaments such as rings and beads were often made of semiprecious stones; for example, jade. Bone and antler constitute another class of materials for such objects as needles, awls, fish-hooks, arrowheads, spearheads, chisels, points, polishers, beads, etc.

The artistic activity of Early Neolithic farmers is shown in the celebrated decorative art of their painted pottery, which indicates mastery of a vivid style as well as artistic resourcefulness, and which suggests there were semi-specialized craftsmen and artists. Figurines of men and animals and pottery rattles show other aspects of their artistic, musical and, possibly, ceremonial life.

Their pottery was moulded by hand and evidence of the coiling technique has been observed at Liang-ts'un 梁村, in Ch'i-hsien 祁縣, Shansi,[73] at Pai-tao-kou-p'ing 白道溝坪 near Lanchow, Kansu,[74] at Yang-shao-ts'un in Honan,[75] and at several localities near Sian in Shensi.[76] A turning-table may have been used for finishing the rim in the pottery of the Shansi-Shensi region,[77] and excavated implements for making pottery include bone scrapers (Pan-p'o),[78] stone polishers (Yang-shao-ts'un),[79] and paint-grind-

ing stones and containers for paint (Pai-tao-kou-p'ing).[80] Kiln sites have been discovered at Ching-ts'un,[81] Pan-p'o,[82] Mi-chia-yai 米家崖 (Sian),[83] Pai-tao-kou-p'ing,[84] and Lo-han-t'ang.[85]

Several classes of pottery were made in order to serve various purposes. For cooking were made red or grey-brown thick-walled, pointed-bottomed jars and, in a later period, hollow-footed tripods (*li* 鬲), containing a noticeable amount of sand or mica temper and decorated with moulded, thick and thin cord-mat-basket impressions. Coarse or fine, red and gray pottery in the form of thin-necked, big-bellied jars was manufactured for storage, red and grey cups of a variety of pastes were made for drinking, and beautifully polished red and black bowls and basins, sometimes painted with black or red designs, were made of fine paste to serve at meals and rites. Besides receptacles, spindle whorls, knives, sling balls, and net sinkers were also made of baked clay.

We have no data on when the Early Neolithic farmers in North China mastered the art of pottery manufacture, but it is certain that at the very beginning they did not make such highly polished, thin walled, well-fired and beautifully painted wares of fine paste. On the evidence of distribution, we may assume that the earliest pottery in North China may have been a kind of coarse, low-fired, red, grey, or brown, sand-tempered pottery with cord-mat-basket impressions.[86] Traces of the pre-Yangshao Early Neolithic cultures exist at Kou-tung-ch'ü 溝東區 at Tou-chi-t'ai, near Pao-chi in Shensi, where cord-marked, red, grey and black ware of a coarse paste has been found beneath the Yangshao painted pottery stratum,[87] and at Kao-ch'iao-ts'un 高橋村, Ta-tung tien 大東店, Chüeh-shan-ts'un 厥山村, Nan-kang-ts'un 南崗村, and I-li-ho 一里河, in the vicinity of Loyang, Honan, where red and grey, coarse, corded wares and polished stone tools have been collected.[88] Other scattered finds of corded wares, not associated with either the painted or the typical Lungshan sherds, can be enumerated from all over North China, but their chronological position is uncertain. Only toward the end of the Early Neolithic did the Northern Chinese make the improved polished, red and black ware of a fine paste. Even then, they had not learned the use of the potter's wheel, and their locally obtained paste was not standardized.[89]

The Early Neolithic culture was distributed over all the central Yellow River region, and several roughly contemporary regional phases are distinguishable: (1) northern Honan, where pottery was often slipped in white and painted on the outside of bowls and basins in red and black; (2) Kansu and Chinghai, where white slip was not used and where the paint for utensils for daily use was always black and animal and plant designs were often used on the inner surface of bowls and basins and on the outside of thin-necked jars; (3) southern Shansi and western Hopei, where pottery was not slipped in white and was painted in both red and black; and (4) central Shensi, where white slip was occasionally used and animal designs, mostly in black, were sometimes used on the inner surface of bowls and basins. On the whole, the culture of this stage was fairly uniform throughout the entire area. Honan and Kansu were slightly differing regions, while the Shansi-Shensi phase was somewhere between the two. Stratigraphical evidence uncovered at Ma-chia-yao in 1957 indicates that the Kansu phase is chronologically later than the Honan and Shansi-Shensi phases. Traces of painted sherds have been found as far west as Sinkiang and as far east as Shantung, but in both of these regions they occur in a peripheral cultural context.[90]

Following the Early Neolithic (Yangshao) stage of Chinese Neolithic culture, came the Late Neolithic or the Lungshan, also referred to as the "Black Pottery Culture." The current view on the relationship between the Yangshao and Lungshan "Cultures" differs somewhat from that of a decade or two ago, but archaeologists have not reached agreement on this point. It was formerly believed that in Neolithic North China there were two contemporary "cultures," the Painted Pottery Culture of the western loess plateau part of the country and the Black Pottery Culture located more toward the eastern coast. In the northern Honan region, a stratified relationship of Lungshan over Yangshao has been observed at Hou-kang, Hou-chia-chuang 侯家莊, Ta-lai-tien 大賚店, and other localities. This stratigraphy was not observed by Andersson at Yang-shao-ts'un, the type site of the Yangshao Culture, where both painted and black wares were

unearthed. A number of speculations have been advanced to meet the stratigraphical inconsistency, and the one considered most satisfactory is that in northern Honan the cultures arrived at different time levels, while in western Honan they simply "mixed together." Andersson was not satisfied with this view, and his 1943 version of the situation was as follows: "What we found at Yang Shao Tsun may be only the beginning of the black pottery which, upon the abandonment of the painted pottery and the development of the Kuei tripod, bone divination and the building of mud walls, grew up to form the mature Lungshan Culture." [91] Standing with Andersson are two Japanese scholars, Mizuno [92] and Sekino,[93] who also see the Yangshao and Lungshan as two stages of ceramic history in China.

I would like to modify and expand the viewpoints of Andersson, Mizuno, and Sekino by suggesting that the Lungshan Culture was a development out of the Yangshao Culture, not only in the art of ceramics but also in terms of total cultural structure, and that this development took place somewhere in the North China Nuclear area; that is, around the junction of the three provinces, Honan, Shensi, and Shansi or the confluence of the three great rivers, Huang, Wei, and Fen. At some sites, painted sherds have been found beneath black sherds; there the site was occupied at two remotely separated periods (see Table 1). Other sites have yielded both painted and black sherds since they were occupied near the transitional stage. At Yang-shao-ts'un, for instance, black sherds occur at the very bottom but increase as the deposits thicken, and while painted sherds persist until the very end of the site's occupation, they decrease proportionally as black sherds increase.[94] Its large area of settlement and relatively long period of occupation [95] also indicate that this site marks the ending of the North China Early Neolithic. At other localities in this Nuclear region, transitional phases from Yangshao to Lungshan are plainly observable at the following sites: Hsi-yin-ts'un [96] and the Sanmen Gorge 三門峽 region [97] in Shansi and Shensi; Lo-yang,[98] Lo-ning 洛寧,[99] Kwang-wu,[100] and Shan-hsien [101] in Honan. In addition, the Lungshan stage sites at Liu-tsu-chen in Hua-hsien, Shensi,[102] Miao-ti-kou near Shan-hsien,[103] and Shang-tien near I-yang [104] in

Honan, all contain painted sherds and other " archaic " elements and are regarded as representing the earliest phase of the Lungshan Culture.

Contrasts in general cultural structure between the Early and Late Neolithic periods in North China may be briefly indicated as follows:

TABLE 1

CONTRASTS BETWEEN THE EARLY AND LATE NEOLITHIC CULTURE OF NORTH CHINA

Early Neolithic	Late Neolithic
(Lower in stratification wherever a stratified relationship exists)[105]	(Upper)[105]
Shifting settlement; repetitive occupation	Sedentary settlement; relatively permanent occupation
Slash-and-burn cultivation	Irrigation? Fertilizer? Fallowing?
More symmetrical edges than asymmetrical on all edged tools; more circular and oval cross-sections; wood-felling-complex more characteristic	More asymmetrical edges than symmetrical; more rectangular cross-sections; wood-working complex (adze, chisel, and antler wedge) more characteristic
Rectangular, single-holed or double-notched stone knives more characteristic	Semi-lunar and double-holed, or sickle-shaped stone knives and shell knives more characteristic
Handmade pottery	Appearance of wheel-made pottery
Predominance of point- and round-bottomed jars and pots	Predominance of ring-footed bowls and tripods
Predominance of cord-mat-basket impressions	Predominance in some regions of checker impressions and incisions
Predominantly red corded and fine-paste red and painted pottery wares	Predominantly grey corded and fine-paste grey and black wares; only locally painted pottery
?	Shell and ?bamboo containers
None	Scapulimancy
None	*Hang-t'u* (compacted earth) village walls
Decorative art in ceramics	Decorative art in other fields than ceramics
Extended and flexed burials on back	Same, with addition of some prone burials

The Late Neolithic Culture had a wider distribution in North China: in the North China Nuclear area, the Lungshan phase developed out of the Early Neolithic, and from there it expanded

eastward to the Shantung Peninsula, Liaotung Peninsula, and the Huaiho Valley; in Kansu the Late Neolithic Culture took the form of the Ch'i-chia 齊家 Culture.[106] In this vast area, several subdivisions are again distinguishable, more or less following leads from the Early Neolithic: (1) in Kansu, where the Ch'i-chia phase occurs; (2) in Shansi-Shensi, where pottery was predominantly grey in color, mostly handmade, and more often of the *li* than of the *ting* form, occasionally with ring-feet and with more cord-mat-basket designs than checker patterns, and where double side-notched stone knives were used;[107] (3) northern Honan, where the checker design is characteristic, the paddle-and-anvil technique is more commonly found, and where there is less black eggshell pottery; (4) Shantung Peninsula, where the *ting* form is more prevalent in pottery than the *li* form and where the surfaces of pots are more often plain than decorated; (5) Huaiho Valley, where southern elements are abundant and painted wares are found; and (6) the region around northern Bohai Bay, where northern elements are abundant.[108] In general, the culture of this stage was less uniform from one region to another than the Early Neolithic, and regional stylistic variations are markedly defined. Such variation may have partly resulted from the fact that Late Neolithic farmers were more settled than migrant and thus tended toward specialization. The Late Neolithic Culture also underwent a rapid expansion in all directions, possibly because of population pressure.

Liang Ssu-yung's excellent summary of the Lungshan phase of North China Neolithic[109] still holds to a considerable extent, and what follows here will be of a supplementary nature. The Late Neolithic subsistence remained agricultural, with hoes and spades still the principal cultivating implements. Here and there have recently been collected big, elongated stone implements, which often are called "plows." It is dubious, however, whether they are definitely of Lungshan stage and whether they were plows. No remains of crops have been discovered other than wheat in the Huaiho region, but presumably millet and possibly kaoliang continued to be the staple crops. Mortars and pestles still served for the grinding of grain.

There do not seem to have been changes in the livestock raised, for bones of pigs, cattle, and dogs have been unearthed at Ch'eng-tzu-yai,[110] Ch'i-chia-p'ing 齊家坪,[111] and Yang-t'ou-wa 羊頭窪.[112] The wild game which was hunted included the bamboo rat (Ch'i-chia-p'ing),[113] hare (Ch'eng-tzu-yai), horse (Ch'eng-tzu-yai and Yang-t'o-wa), wild boar (Pu-chao-chai),[114] deer and water deer (Ch'eng-tzu-yai, Hung-chia-lou, and Yang-t'ou-wa). Chickens were raised at Yang-t'ou-wa, where wild birds were also hunted in quantity.[115] Fishing is again attested by numerous remains of fishhooks, net sinkers, and bone harpoons. Spindle-whorls, bodkins, and eyed needles again give evidence of the weaving of fabrics.

The slash-and-burn method of cultivation had given way to some other sort of planting technique which made possible relatively permanent settlement. Irrigation, fallowing land, and the use of fertilizer are possible improvements of this period, although we have no actual evidence of them. At any rate, Late Neolithic settlements occupied wider areas for longer durations than did those of the Early Neolithic. In Kansu, the site of Ch'i-chia-p'ing is bigger and has a thicker cultural layer than the nearby Yangshao sites, and a more or less continuous occupation has been observed.[116] In the vicinity of Sian, six Late Neolithic sites were located in 1951 and 1953, and in comparison with the Yangshao settlements in the same neighborhood, mentioned earlier, they are lower topographically, fewer (compared to the twenty-one at Yangshao), more concentrated, and at each of these sites a longer occupation and a considerable cultural change through time has been noted.[117]

Similar phenomena have been observed in Honan, where at Lo-ning,[118] Hou-kang,[119] and Ta-lai-tien,[120] it has been repeatedly established that all the Lungshan occupations were larger in area and longer in duration than the former Yangshao occupations at the same site. Among seven Lungshan settlements that have been carefully measured, three range in area from 100,000 to 200,000 square meters (Ch'eng-tzu-yai, Ch'i-chia-p'ing, and Tan-t'u-ts'un 丹土村); one (An-yao-wang-ts'un 安堯王村 in Jih-chao 日照, Shantung) ranges between 300,000 and 400,000; one (Hsi-

wang-ts'un 西王村, Lo-ning, Honan) between 400,000 and 500,000, one (Liang-ch'eng-chen) measures 990,000, and the remaining one (Ta-wa-ts'un 大窪村, near Jih-chao) measures 1,750,000 square meters. All of them were single occupations and have a depth of one to four meters.[121] The sedentary nature of their occupants is further told by the permanent village wall of Ch'eng-tzu-yai and Hou-kang and the abundance of asymmetrically edged tools designed for carpentry rather than for felling trees.

Late Neolithic communities were again of the village pattern, but we have a few architectural remains. Around the whole village at times a mud wall was constructed in *hang-t'u* layers, about six meters high and from nine to fourteen meters thick.[122] Inside were dwellings, semi-subterranean, circular in plan, with a clay or lime-plastered floor, at the center of which was a hearth.[123] Rectangular dwellings, like those of the Early Neolithic, have not been found in North China proper, but some of masonry have been unearthed at Yang-t'ou-wa on the Liaotung Peninsula.[124] Near the dwellings are semi-subterranean granaries, similar in construction to the circular houses. Each circular hut was presumably occupied by a single household, and the circular arrangement of houses faintly indicated at Hou-kang [125] suggests a lineage type of society. Burials have also been found in the settlements. The dead were inhumed in simple rectangular pits in extended posture, lying prone or on the back. A few pots or cups and sometimes stone tools accompany the dead. Prone burial, the use of the potter's wheel, and the concentration of semiprecious stone implements at Liang-ch'eng-chen suggest the beginning of significant social specialization and differentiation.

Belief in an after life, a fecundity cult and an agricultural rite, a deer ceremony, and the use of miniature vessels, all may be considered to have continued from the Early Neolithic stage, but now scapulimancy was an important addition. Scraped and burned shoulder blades of cattle and deer have been found at Ch'eng-tzu-yai, Yang-t'ou-wa, Kao-ching-t'ai-tzu 高井台子, Hou-kang, T'ung-lo-chai 同樂寨, Hei-ku-tui 黑孤堆, Ta-lai-tien, An-shang-ts'un 安上村 (in T'eng-hsien 滕縣, Shantung), and Ta-ch'eng-shan 大城山 (in T'ang-shan 唐山, Hopei), and the cracks

in these were probably interpreted by shamans to divine the weather, to foretell the harvest, and to predict the outcome of a hunting or fishing expedition.

For artistic activities, the making of figurines and the production of some masterpieces of eggshell pots carried on the great Yangshao art tradition, but the remarkable ceramic painting was gone. Painted red and black pottery, however, did not, as many have assumed, disappear altogether; examples in a Late Neolithic context have been found in I-yang-hsien [126] and Shan-hsien,[127] western Honan, in Hua-hsien,[128] central Shensi, and at many sites in southern Shantung, southeast Honan, and northern Kiangsu.[129] On the other hand, black sherds stem as far back as from the Early Neolithic. If, as does Heine-Geldern,[130] one wishes to derive the black pottery from the eastern Caspian region, he must demonstrate that the black pottery (together with its associated complexes) of North China and that of the Caspian area are necessarily related and show that the black pottery in the Caspian area is earlier in time. Both of these conditions have not been fulfilled at all. However, what we are interested in at this point is not the origin of the black pottery, but we wish primarily to ascertain why the painted pottery gave way to the black ware. It seems to me likely that the Late Neolithic people simply shifted their interest from domestic ceramic painting to some other decorative art, possibly ritual wood-carving. A wood-carving tradition was handed down to the Yin-Shang people,[131] and it is quite possible that they obtained this heritage from their Late Neolithic ancestors. The abundance of carpentry tools (adzes, gauges, chisels, and antler wedges) in the Late Neolithic period is particularly significant in this regard.

The Lungshan farmers had mastered perfectly the art of pottery, since chemical analysis has revealed the fact that their paste was highly standardized [132] and since evidence of the use of the potter's wheel is plentiful. Yet handmade pieces still predominated, and the paddle-and-anvil technique was introduced to make the impressed pots. Stone polishers and stone balls which were possibly used as anvils have been unearthed. In form, the Late Neolithic is characterized by the ring-footed pots and the abundance of

ting- and *li*-tripods. As for color, grey is predominant, black and red come next, and yellow characterizes eastern North China. Again, sand-tempered tripods were made for cooking, coarse and fine jars for storage, finepasted bowls, basins, eggshell bowls, and high-ring-footed bowls for dining and ritual purposes. Some of the pottery is without design, some shows only the wheel marks, some is decorated with paddle-impressed cord, basket, and checker patterns. Painted sherds (black on red and red on black, etc.) occur mainly in the Huaiho Valley and only occasionally in western Honan.[133]

Stone implements were mostly polished and again include such common types as axes, adzes, hoes, spades, chisels, knives, and arrowheads. Differing from the Early Neolithic, however, the Lungshan farmers made more asymmetrically edged and rectangularly cross-sectioned adzes and chisels than symmetrically edged and rounded cross-sectioned ones, as well as more double-holed semi-lunar knives and sickles than rectangular knives.[134] Also present are mortars and pestles, manos and metates, polishing stones, flat axes, net sinkers, spindle whorls, and ornaments. Bone, antler and mollusk shell implements are characteristically abundant, including such forms as needles, awls, wedges, semi-lunar knives, and saws. The use of metal may have begun toward the end of this stage, as traces of a metal saw have been observed on some antler fragments and some of the pottery styles are reminiscent of later metallic styles. Some remains of metal ornaments have also been unearthed from Late Neolithic settlements at Ta-ch'eng-shan and Yang-t'ou-wa.

Following the Late Neolithic in the middle and lower Huangho regions came the urbanization of the Yin-Shang civilization, which I have discussed in full elsewhere.[135] By the end of first millennium B. C., human deforestation, coupled with climatic deterioration, had had enough effect to wipe out the ancient woodlands, and Neolithic settlement sites lay unnoticed under repeated disturbances until the turn of the present century when archaeologists began their scientific work in North China.

The Woodland-Oasis Complex on the Northern Frontier

During the Neolithic revolution in the Huangho drainage, the Mesolithic hunter-fishers carried on their old mode of life in Mongolia, Manchuria, Japan, and Siberia; but many Neolithic cultural elements were continuously introduced, and an agriculturalization gradually took place in southern Manchuria and the Sino-Mongolian borderland. There appear to have been three principal cultural provinces in post-Mesolithic northeastern Asia; namely, the woodland or *taiga* (in Manchuria, around Lake Baikal and the Lena Valley), the steppe-oasis (in Mongolia, the Altai and Upper Yenisei regions), and the maritime (the Pacific coast).[136] In this article, only those regions contiguous to the Huangho area will be described.

In Mongolia all the Mesolithic and Sub-Neolithic (Mesolithic plus pottery and/or polished stone) remains lie on or just under the surface of the grass steppe, and no cultural strata can be distinguished.[137] Such a condition indicates that Mesolithic and Sub-Neolithic settlements were seasonal in nature. A basically Mesolithic way of life, dependent upon hunting and in part upon fishing, seems to have continued down to the end of the Stone Age, as is particularly illustrated by the microlithic substratum of Sub-Neolithic industries.[138] The Mongolian microlithic industry, in comparison with that of Europe, is characterized by its lack of geometric forms as well as its use of the microblade instead of microburin technique and by its frequent association with pottery and polished stone implements.[139] Stone-headed arrows and spears with side-bladed bone points or chipped stone heads were made throughout Mongolia for killing wild game. Chipped stone knives, side-bladed bone knives, and crude side-scrapers and choppers may have served for skinning animals, cutting meat and flaying skins. Simple flakes, scrapers, and knives probably served for gutting and scaling the fish caught in lakes near the settlements. Agriculture was lacking, as the usual agricultural implements such as spades, hoes, and digging stick weights have not been found. Axes may have served for cutting and shaping wood, and mealing stones for grinding wild seeds. Potsherds have been

found at many sites of a handmade, crude, non-slipped, grey, brown, or red pottery, decorated with impressed and molded cord-mat-basket patterns, sometimes with incisions and appliqués. Occasionally a few painted sherds have been found. Bone and antler implements occur in an inconsiderable amount, possibly on account of their perishability. For the same reason, the fauna of these Mongolian sites is not clearly known.[140]

In Manchuria the microlithic based Sub-Neolithic culture is distributed in the area almost north of Ch'ang-ch'un 長春, Kirin. Microliths, flakes, scrapers, and leaf-shaped arrowheads and projectile points and crude brown potsherds, cord-impressed or incised, have been exclusively collected on the surface. In a grave, excavated by Liang Ssu-yung on a sand dune west of Ang-ang-hsi on the east bank of the Nen River, was found a body, buried on its back, headed north in an extended position. Two pots, six flakes, one polished stone adze, six bone spearheads and harpoons, three bone awls, one bone knife handle, one antler tool, some bird bones, and one sawed deer femur were buried with it. In the vicinity of the grave, a variety of microliths, pressure-flaked knives and arrowheads and polished stone adzes, beads, manos and metates, and handmade, crude brown potsherds, decorated in incised or appliqué bands were also collected. Remains of animal bones, including those of frogs, birds, fish, pigs, deer, turtles, and dogs were also in evidence.[141]

These finds indicate a lake-hunter-fisher's seasonal settlement. In a cave on the Wo-k'en-ha-ta 倭肯哈達 Mountain near I-lan 依蘭, Heilungkiang, three dwelling layers and two burials were recently excavated. Polished stone axes and ornaments, bone plates of armor, and sherds of combed handmade pottery were collected. This cave had apparently served first as a seasonal settlement for a hunting-fishing group and finally as a burial place. Bodies were inhumed in squatting, flexed posture. Viewed from all aspects, these finds indicate that the hunting-fishing culture persisted in northern Manchuria until very late historic periods.[142] These finds (e. g., flat-bottomed pots, bone armor, bone points, etc.) bear resemblances with the maritime phase of the North Asian Stone Age.[143]

The hunting-fishing Sub-Neolithic cultures possessing corded,

pitted, and combed pottery and occasionally polished stone tools, particularly ground slate rectangular and semi-lunar knives and slate arrowheads of the Mongolia-Northern Manchuria type, had a circumpolar distribution over all northern Eurasia,[144] Japan (the Jōmon Culture), and northeastern North America. Although, as Okladnikov has suggested, these northern woodland people may have invented independently the art of making pottery, the possibility of an external derivation cannot be completely ruled out. For at least the corded ware of the Northeast Asiatic Maritime area two possible sources of derivation are the Near East and the Black Earth regions of eastern Europe, where agricultural centers appeared early and where corded pottery occurs among the ceramic types.

But several factors favor the hypothesis that the art of making pottery in the circumpolar forest and boreal zone may have been derived, at least in part, from the Early and Late Neolithic Yellow River region: (1) There are no better parallels with the slate rectangular and semilunar knives and the compound bow, associated with cord-impressed pottery in the north, than those of Neolithic and Bronze Age North China. (2) As described earlier, crude corded pottery was one of the main products of the North China Neolithic. One would not be surprised if future finds should reveal that it was the main product of the North China Neolithic ceramic industry. (3) As we shall see, the earliest Neolithic stratum in Central and South China is again represented by corded ware. Had there been any relationship among the corded wares of North China, northeast Asia, and Central and South China, that relationship naturally suggests that North China was the center of radiation. (4) Finally, there exists established evidence of a continuous flow of cultural influences between Neolithic North China and northeast Asia. In fact, northern Chinese influences are clearly seen in the Amur region from the beginning of the local " Neolithic " in the third millennium B. C.[145]

As shown by Albert Spaulding,[146] the circumpolar zone is particularly susceptible to rapid transmission of ideas and cultural traits. An Eastern Asiatic agricultural influence may even account for some prehistoric cultural events taking place in northern North America,[147] particularly in the Northwest Coastal area.[148]

Recent studies of the decorative art of the Yin and of the Northwest Coast [149] are significant in this regard.

Returning to eastern Asia, we find that a full-scale agriculturalization gradually took place in those areas in eastern Mongolia and southern Manchuria where ecological conditions were favorable and where there was direct contact with the North China Neolithic cultures. The most thoroughly investigated portion of Inner Mongolia is its eastern region in the upper reaches of the two tributaries of the Liao River, the Hsi-liao (Shiramuren) River and the Lao-ha River.[150] In southern Manchuria the best investigated regions are the valleys of the Ta-ling, the Lower Liao,[151] the Upper Sungari, and the Upper Tumen Rivers,[152] and the Liaotung Peninsula. Northern Chinese influences seem to have entered this whole area since Early Neolithic times and to have continued through the Late Neolithic. Yangshao influences appear to have reached to a line, roughly connecting Lin-hsi, Ch'ih-feng 赤峯, Chao-yang 朝陽, Chin-hsi 錦西, and possibly Port Arthur and Dairen.

Farming settlements have been located extensively at Lin-hsi,[153] Ch'ih-feng,[154] Chao-yang,[155] and the areas to the west,[156] and evidence of at least an incipient agriculture is seen in the famed Sha-kuo-t'un 沙鍋屯 Cave near Chin-hsi.[157] Polished and partly polished stone hoes, spades, digging stick weights, mortars and pestles, manos and metates, axes, adzes, spindle whorls, and pottery suggest agricultural life; numerous microliths, chipped arrowheads, flakes, and deer bones indicate the continuation of the old Mesolithic mode of hunting life. Fishing is evidenced by stone net sinkers. Remains of dog, sheep, and possibly pig bones indicate the nature of their livestock. All the pottery is handmade, either coarse or fine, plain or decorated with cord-marking, incisions, appliqués, combed patterns, and painting. As a whole, remains indicate continuation of part of the old mode of Mesolithic life, with northern elements coming from the constantly evolving woodland and boreal patterns (e. g., combed wares, pitted wares, stone mounds, and battle axes), and southern elements coming from Early Neolithic North China (agriculture, stock-breeding, polished stone tools, and pottery, above all, the painted variety).

In the Liaotung Peninsula, Early Neolithic influences are rare. To be sure, " painted pottery " has been recovered from a number of localities (Tan-t'o-tzu 單砣子, Wang-hai-kuo 望海堝, P'ing-ting 平頂, and Wen-chia-t'un 文家屯),[158] but except at the latter site near Port Arthur, where two burnished red sherds of Early Neolithic North China type were collected,[159] all the painted pottery is of a quite distinctive kind and seems too late to be connected with the Yangshao style. Red, white, and yellow paint was applied on the surface of bowls and jars in distinctive geometric designs, but in such a manner that it tends to flake off.

It seems safe to say that the agriculturalization of this region was not completed until the Late Neolithic of North China. Here too, stone battle axes, stone mounds, and combed ceramics indicate a native background derived from the northland; but intensified North China influences in the Liaotung Peninsula began quite early, as indicated by the full-fledged Lungshan type of settlement, Yang-t'ou-wa near Port Arthur, where wheel-made black pottery and a burned oracle bone have been found.[160] A complete Sinicization was not achieved, however, until the Han dynasty, and in the interval the native Neolithic cultures persisted, continuously receiving donations from North China during the Yin (e. g., Lao-tieh-shan 老鐵山 near Port Arthur) and Chou (e. g., Kao-li-chai 高麗寨) periods.

On the southern Manchurian plains Neolithic sites have been located extensively in the valleys of the Upper Sungari and Tumen Rivers, sites for the most part situated on the river terraces. The small area (3,000 to 52,000 m^2) and thin layer (10-30 cm.) of occupation suggest that early Manchurian Neolithic settlements were of an impermanent nature. This fact is further confirmed by the extensiveness of settlement sites in the same neighborhood. Their inhabitants seems to have lived mainly on agriculture, as indicated by (1) the abundance of stone axes, knives, sickles, and metates; (2) the remains of many unspecified grains (?millet); (3) the great population density as indicated by the density of settlement distribution and the great area of cemeteries; and (4) the large amount of pig bones in stone cists. Some settlements had a cemetery where the dead were buried in stone cists in extended or semi-flexed posture. Male bodies were buried with

arrowheads, axes, chisels, and pots, while those of females are accompanied by spindle-whorls, stone knives, and pots. Such a division of artifacts suggests that in the division of labor males did the hunting and clearing of fields for cultivation and females did the weaving, seeding, weeding, harvesting, and domestic tasks. Hunting and fishing are indicated by remains of arrowheads and by stone or pottery net sinkers. The farmers made sand-tempered brown pottery by hand, wares which are in most cases plain and only occasionally corded or incised. Pottery forms include *ting-* and *li*-tripods, jars, bowls, etc.[161]

The agriculturalization of southern Manchuria must have begun during the Late Neolithic stage in North China, but its completion may have come later and the Neolithic way of life persisted in this area up to and into the Han dynasty. Metal objects and stone or bone imitations of metal forms have been found in considerable quantity in Neolithic settlements, particularly those of a later date.[162] In this vast area, two or three regional phases are distinguishable, one concentrating around the area of Ch'ang-ch'un and Kirin City, the other in the Tumen Valley. In the former region a strong Chinese influence is evident as *ting-* and *li*-tripods have been found in great quantity and symmetrically edged axes and polished stone spades and knives are characteristic. In the latter region more jars and bowls than tripods and giant-sized stone or bone spearheads and daggers are characteristic, artifacts which resemble those of the Neolithic culture in the vicinity of Vladivostok. The Tumen Neolithic people were undoubtedly agriculturalists, but hunting in the eastern part and fishing in the west were almost as important.[163]

Agriculturalization of Central and South China

No serious topographic barriers prevented the southward expansion of North China Neolithic farmers. From the start of the Neolithic revolution, North China agricultural pioneers poured continuously into the vast area drained by the Yangtze and Pearl Rivers, an area thinly populated by Mesolithic hunter-fishers and of great potentiality for cultivation. At least three possible routes existed for this southward agriculturalization: the Chialing River Valley into the Red Basin, the Han River Valley into the

Middle Yangtze, and the Huai River Valley southward along the coast.

1. Szechwan and Vicinity.

The prehistoric archaeology in this area has been described by Cheng Te-k'un in great detail,[164] and I shall do no more than summarize his data and fit them into the whole China context. Cheng classifies, on typological and distributional grounds, the Szechwan remains in four stages: Mesolithic (chipped stone implements), Early Neolithic (chipped and polished stone implements), Late Neolithic (chipped and polished stone implements, chipped-pecked-polished stone implements), Aneolithic (polished stone implements and pottery). This sequence is observed in the eastern portion of the province; the art of stone polishing failed to penetrate into the western portion, although pottery occurs side by side with chipped stone implements of a Mesolithic type. In order to fit Szechwan prehistory into the context of this paper, I would like to alter Cheng's scheme as follows:

Third Neolithic: chipped, and/or polished stone implements and pottery of Cheng's classes A, B, E, F (roughly, corded wares and Geometric wares).

Second Neolithic: chipped, pecked, and/or polished stone implements and pottery of classes A, B, D (roughly, corded wares and black pottery).

First Neolithic: chipped, pecked, and/or polished stone implements and pottery of classes A, B, C (roughly, corded wares and painted sherds).

Mesolithic: chipped stone implements and absence of pottery.

My reasons for this rearrangement are simple: (1) According to Cheng's Table 3, the chipped stone implements can be singled out as belonging to the earliest stage since they are found over all Szechwan, but the polishing and pecking techniques can only be regarded as roughly contemporaneous; and (2) according to Cheng's Tables 4 and 9, stone implements and pottery have been found in association at the following sites: Ku-lao-pei 古老背 (chipped-pecked-polished; corded-black), Hsien-jen-ch'iao 仙人橋 (chipped-polished; corded-painted-black), Site 5, I-ch'ang 宜昌

(polished; corded-Geometric), Hsin-t'an 新灘 (chipped; corded-painted), Hsiang-chia 香峽 (chipped-pecked-polished; corded), Lower Wu-shan-chia 巫山峽 (chipped-pecked-polished; corded-Geometric), Tai-hsi 代溪 (chipped-pecked-polished; corded-painted), Kao-wei-tzu 高桅子 (chipped-polished; corded), and Yüan-mou 元謀 (chipped-polished; corded). These finds seem to indicate that corded ware is the earliest and lasted the longest and that the whole sequence can be dated according to the presence or absence of stone polishing and of painted sherds, black sherds, and Geometric sherds, the latter three types of ceramics, as horizon-styles, having been well dated elsewhere in China. It seems proper, then, to include Yüan-mou, Kao-wei-tzu, Hsiang-chia, Tai-hsi, and Hsin-t'an in our First Neolithic; Ku-lao-pei and Hsien-jen-Ch'iao in our Second; and Site 5, I-ch'ang and Lower Wu-shan-chia in our Third. This attribution indicates that in Szechwan the Neolithic acculturation appeared mainly in the First Neolithic stage, while successive influences from outside (Lungshan and Geometric) subsequently touched only the extreme eastern portion. The Red Basin route for the incoming of agriculture appears particularly significant in view of the fact that there were a number of distinctive parallels between the Neolithic in Taiwan (Formosa) and the Neolithic in Kansu and Chinghai, such as chipped flake knives and saddle-shaped stone knives.[165] The Li-fan 理番 cemetery, containing amphora jars similar to those of Ch'i-chia-p'ing, on the one hand, and stone cists and stone ear-plugs similar to finds in Taiwan, on the other, may serve as a significant link.[166]

2. Middle Yangtze

In this region Neolithic cultures may have diffused southward along the Han River into Hupei and thence to Hunan and Kiangsi. Unfortunately, this is the region in the whole of China whose prehistory is least known. The handmade, corded, red and grey pottery, both fine and coarse, and polished stone tools collected at Yang-chia-wan 楊家灣 in Huang-p'i 黃陂, Hupei,[167] remind one of Early Neolithic pottery in the north, but the associated black sherds are quite Lungshan-like. Geometric potsherds are found in the upper layers at the same site. In the regions of Ching-shan

京山 and T'ien-men 天門 in the same province has recently been discovered a basically Lungshan phase of Neolithic culture. Fine-pasted black and red pottery, heavily sand-tempered, coarse, red pottery, skilfully wheel-made, and painted eggshell pottery, painted spindle whorls, and pottery figurines have been excavated. Among the animals represented in the figurines are sheep, dogs, ducks, geese, wild birds and animals, turtles and fish, all of which throw some light on the subsistence of these early inhabitants. Additional information has come from a kiln site at Shih-chia-ho in T'ien-men, where on the wattle-and-daub wall surfaces have been observed impressions made by paddy grains and straws.[168]

At the I-chia-shan 易家山 site in I-ch'un-hsien 圻春縣, Hupei, a similar culture, consisting, among other things, of grey and red, coarse, sand-tempered and corded wares and hard wares, impressed with geometric designs, has been discovered on top of a small hill.[169] Here, the Lungshan-like remains and the Geometric sherds are mixed up, possibly as the result of some disturbance, since in the province of Kiangsi as well as at the Yang-chia-wan site at Huang-p'i, Hupei, there appears to be a stratified relationship between those two ceramic industries. A series of well surveyed sites near Ch'ing-chiang 清江 (Chang-shu-chen 樟樹鎮), Kiangsi, show all the settlements situated on top or on the slopes of small riverside hills. Stratified deposits seem to suggest that two cultural strata existed, the earlier one represented by wheel- or mould-made, fine or coarse pasted, grey and brown pottery and the latter by handmade, hard, grey wares bearing geometric impressions. Oval cross-sectioned stone axes, stone adzes, stone stepped adzes, chipped flake knives, rectangular knives, sickles, chisels, arrowheads, spades, spearheads, manos and metates, net sinkers, and grinding stones have been collected from both of the layers.[170] Geometric sherds and stone tools have been found in some quantity at Ch'ang-sha 長沙, Hunan, where remains have been collected on top of small riverside hills.[171]

3. The East Coast

The eastern coastal zone extends from the Huai River Valley down to the mouth of the Pearl River. This is the area which in the whole of Central and South China has been most extensively

investigated, and its regional sequences can best be summarized in the following charts:

TABLE 2

THE HUAI RIVER VALLEY SEQUENCES

S. Shantung	S. Honan	N. Kiangsu	N. Anhwei
Han	Han	Han	Han
Late Yin-Chou	Late Yin-Chou Upper stratum of San-li-tien 三里店: corded *li*-tripods and *tou*; no *ting*.[174]	Late Yin-Chou?	Late Yin-Chou Yin influenced sites: *li*, *tou*, and corded *kuan*.[178]
An-shang-ts'un, T'eng-hsien: Lungshan-type artifacts.[172]	Tsao-lü-t'ai 造律台 Hei-ku-tui, Yung-ch'eng 永城; Shuang-liu-shu 雙柳樹, Huang-ch'uan 潢川: black, grey and red pottery *ting* and *li*, impressed cord-, basket-, checker-designs; Lungshan-type stone tools; oracle turtle shells. Sites on small hills or mounds with considerable depth. Some hard, grey Geometric potsherds.[175]	Hua-t'ing-ts'un 花廳村, Hsin-i-hsien 新沂縣; Ch'ing-lien-kang 青蓮崗, Huai-an-hsien 淮安縣: Basically Lungshan pottery and stone implements, locally modified. Addition of painted sherds. Sites on small hills or mounds.[177]	Lungshan-type sites: grey, black, red *ting*, cups, and *yen*. Checker designs; Lungshan-type stone implements and bone tools. Remains of wheat at Tiao-yü-t'ai 釣魚台, Po-hsien 亳縣. Lime floored huts. Remains of dogs, pigs, cattle, horses, deer, sheep, fish, turtles and mollusk shells. Stepped adzes.[179]
Kang-shang-ts'un 崗上村: Painted sherds.[173]	Lower stratum of San-li-tien and Yang-shan 陽山: mat-cord-basket- impressed *ting*-tripods and *tou*. No *li*-tripods. Black and painted pottery. Round and rectangular axes, sickles, semilunar knives. Sites on top of small hills with cultural deposits ¼ m. thick.[176]		

Table 3

The Yangtze Delta Sequences

S. Anhwei	S. Kiangsu	N. Chekiang
Han	Han	Han
Chou?	Chou	Chou?
	Upper stratum of So-chin-ts‘un 鎖金村, Nanking: Hard Geometric pottery with usual stone tools.[182]	Upper stratum of Pei-tao-ch‘iao 北道橋, Ch‘ung-tao-hsien: Hard Geometric Pottery.[185]
Hu-chia-ts‘un 胡家村, Chi-hsi 績溪; T‘ien-tzu-fen 天子墳, T‘ang-t‘u 當塗: Hard Geometric pottery, hand-made, red or grey; *ting* and *li* tripods.[180]		
Ta-ch‘en-tun 大陳墩, Ta-ch‘eng-t‘ou 大城頭, and Lung-ch‘eng 龍城, all in Fei-tung-hsien 肥東縣: Hard Geometric pottery, fine-pasted or coarse, corded, red and grey wares, hand-made. *Ting* and *li* tripods. Grains of rice at Ta-ch‘en-tun. Pig and deer bones.[181]	Upper stratum of Pei-yin-yang-ying 北陰陽營, Lower stratum of So-chin-ts‘un, both at Nanking; Hu-shu 湖熟, Chiang-ning-hsien 江寧縣: Settlements on small hills or mounds. Thick deposits. Stone axes, adzes (stepped), knives, sickles, pot-paddles. Corded red wares, Soft Geometric wares, fine black wares, hand- or wheel-made. Trace of metals. Oracle bones.[183]	Ch‘ien-shan-yang 錢山漾 (S), Wu-hsing: Continuation of the old tradition with addition of Soft Geometric pottery.[186]
	Lower stratum of Pei-yin-yang-ying; Hsien-li-tun 仙蠡墩, Wu-hsi 無錫: Sand-tempered, coarse, red pottery, moulded, in cord and basket designs, wheel-made polished black sherds. Stone axes, adzes, knives, arrowheads, chisels, net sinkers. Remains of rice grains at Hsien-li-tun and Hsi-shan 錫山 Park, both at Wu-hsi. Settlements on top small hills or mounds. Thick deposits. Stepped adzes.[184]	Lower stratum of Pei-tao-ch‘iao; Liang-chu 良渚 and Lao-ho-shan 老和山 (Ku-tang 古蕩) at Hangchow; Shuang-ch‘iao 雙橋 at Chia-hsing 嘉興; Ch‘ien-shan-yang (N) at Wu-hsing: Sand-tempered, coarse, red wares, black wares; characteristic perforated ring-feet; stone axes, adzes (stepped), knives, *hache pediforme*, chisels, etc. Settlements on top small hills or mounds. Rice and baskets of bamboo splints at Ch‘ien-shan-yang (N).[187]

TABLE 4

THE SOUTHEAST SEQUENCES

S. Chekiang	Fukien	S. and C. Taiwan	Kwangtung and Hong Kong
Han Shang-t'ang 上棠, Yung-chia-hsien: Hard Geometric, black or grey. Also found in Jui-an-hsien 瑞安縣. Stone *haches pediformes*.[188]	Han Kuang-tze-hsien 光澤縣 sites; Ch'ang-t'ing-hsien 長汀縣 sites; Wu-ping-hsien 武平縣 sites: Hard and Soft Geometric pottery. Stone adzes (stepped), axes, etc. Settlements on small hills.[189]	Ming Upper stratum of Ma-t'ou-lu 麻頭路; Pa-kua-shan 八卦山 Chang-hua 彰化 (Central): Hard Geometric, light grey or black pottery.[192]	Han Pa-tzu-yüan 拔仔園 (PAT) at Hai-feng 海豐 (Hoi-fung); Shih-pi 石壁 (Shekpek) on Lantau I. and Ta-wan 大灣 (Taiwan) and Jung-shu-wan 榕樹灣 on Lamma I. 舶遼洲, Hong Kong; Fen-chi-k'eng-shan 糞箕坑山, Ch'ao-yang 潮陽; Chin-k'eng-shan 金坑山 II, Pao-an 寶安: Hard Geometric.[195]
	T'an-shih-shan 曇石山, Foochow: Cord- and basket-marked red ware, Soft and and Hard Geometric wares, red, black, and painted wares, hand-, mould- or wheel-made; stone axes, stepped adzes, arrowheads. One settlement on a small hill. Painted sherds also found in Kuang-tze-hsien.[190]		San-chiao-wei 三角尾 (SAK), Hai-feng; West Lantau I.; Hung-sheng-yeh 洪聖爺, Lamma I.; Hu-lu-shan 葫蘆山, Ch'ao-yang; Chin-k'eng-shan I, Pao-an: Soft Geometric.[196]
?		Ta-ma-lin 大馬隣; Ying-p'u 營埔 (Central): Black pottery, coarse red ware, stone axes, halberds, knives, and stone	Hsi-sha-k'eng 西沙坑 (SOW), Hai-feng. One hillside settlement. Stone axes, hoes, etc., mostly

TABLE 4 (Continued)

THE SOUTHEAST SEQUENCES

S. Chekiang	Fukien	S. and C. Taiwan	Kwangtung and Hong Kong
	Tai-sung-ts'un 岱嵩村, Chang-p'u 漳浦: Coarse, sand-tempered pottery, buff, black or grey. Some wheel-made. Textile patterns. No Geometric sherds.[191]	cists. Millet?[193] Fen-pi-t'ou 鳳鼻頭, Kao-hsiung 高雄 (South): Red or black pottery, Lungshan-type pots and stone implements. Some painted sherds. Painted sherds also found at two or three other localities in Kao-hsiung and P'eng-hu 澎湖.[194]	lentoid shaped with square and flat sides. Pottery tripods of sand-tempered paste and red color and bowls and fruit stands of coarse paste, black or yellow colored, incised ("combed") and painted.[197]
?	?	Ma-t'ou-lu lower stratum (Central): Corded red ware, chipped stone axes.	Lower stratum of Ta-wan, Lamma I.: Corded ware and chipped stone axes.

From these brief descriptions it is clear that one can distinguish three stages of Neolithic cultures in Central and South China: the First Neolithic or the corded ware stratum, the Second Neolithic or the Lungshanoid, and the Third Neolithic or the Geometric. These three "stages" are actually three points of reference, the development of the last two being continuous. As these three stages largely correspond chronologically to the Early Neolithic, Late Neolithic, and Yin-Chou dynasties of the Yellow River region, the three-stage division is well marked in Central and South China by North China imports or influences of distinctive horizons of the three respective periods.

Before the advent of agriculture, Central and South China was covered by dense subtropical and tropical forests, and the climate may have been about as humid as it is now. Mesolithic hunter-fishers were living in the southwest portion of the continent. Whether they inhabited the southeast portion will have to be disclosed by future findings.[198] The first Neolithic influences came

into this region probably by more than one route, but only in the Red Basin have their traces been found. On an isolated island, Taiwan, in the southeast, the first Neolithic stratum is again strongly marked.[199] We suspect, then, that this culture may have spread along the south coast via the Southwest and Indo-China. This First Neolithic culture is characterized by cord-marked red or grey pottery and chipped and polished stone axes. But whether it was full-grown Neolithic or just marginal Sub-Neolithic is a problem which remains to be solved. Considering the fact that the First Neolithic was diffused to the island of Taiwan, it can be safely assumed that the coast-dwellers were expert navigators.

It is probable that the corded ware stratum is not very widespread in Central and South China. The Lungshan expansion, on the other hand, brought extensive and intensified agriculturization into the entire area, especially the Middle Yangtze region and the east coast. Local specializations and other mechanisms of change certainly gave the Second Neolithic cultures local and regional flavors; and although I am not prepared to say that the Second Neolithic farmers were sedentary rather than shifting, the cultural inventory of the Second Neolithic in Central and South China indicates a derivation which is basically Lungshan. Rice, millet, and root crops were probably cultivated widely, while wheat was planted in some of the northern regions. Livestock consisted of pigs, fowl, dogs, and possibly cattle; the tools of cultivation were stone hoes, spades, knives, sickles, and digging-sticks. Settlements were fairly sedentary and, because of the swampy environment, were located on small hills and on natural or artificial mounds.[200] Red, grey, black, and yellow pottery of coarse or fine paste was manufactured by hand or on a wheel. Stone tools were polished and were in many cases rectangular in cross section. Stepped adzes were plentiful on the east coast.

This Lungshanoid Neolithic culture lasted throughout Central and South China until late Yin or early Chou times (late second and first millennia B. C.) when the Geometric pattern of pottery decoration developed, possibly as a result of stimulation from bronze decorative patterns of the North. It is noteworthy that Hard Geometric sherds have been found among the pottery of Yin at Hsiao-t'un 小屯 and Erh-li-kang 二里崗 [201] and are also

seen in the Huai River late Lungshan sites.[202] The Geometric pottery gradually reached the height of its development from a " soft " to a " hard " stage and was handmade by the paddle-and-anvil technique or the mould technique. The rest of the cultural inventory remained unchanged, with the exception of the importation of bronze metallurgy at certain places, until the final complete Sinicization during the Han dynasty and thereafter. At Hai-feng we have the only C-14 dates published so far: 1,167 ± 150 B. C. for Nan-sha-k'eng 南沙坑 (SOS) and 994 ± 400 B. C. for Nan-tung-k'eng 南東坑 (TAS), both of the Geometric stage.[203]

The Central and South China Neolithic, in its last two stages, is a continuous development and constitutes a fairly uniform cultural pattern. From an ethnological point of view, it may be synchronized with the early part of proto-Malayo-Polynesian history.[204] A reconstruction of the latter culture, based on both archaeological and ethnological evidence, has been attempted elsewhere,[205] and the following notes may suffice for the present purpose. First, a noticeable phenomenon is that, archaeologically speaking, the stepped adze, the *patu*-club and the mound habitation tended to have an eastern distribution. In the Middle Yangtze and eastern coastal areas, many of the Second and Third Neolithic settlements were located on small hills or mounds, presumably because the low plains were then wetter and more swampy than at present.[206] Some of the mounds were probably artificially constructed. Later, we have evidence in the Third Neolithic of the pile-dwelling in the southern portion of the area.[207] But old-fashioned mound builders are still found in Polynesia. This fact, coupled with the fact that stepped adzes and *patu*-clubs are both distinctively Polynesian and that the prone burial custom at Liang-ch'eng-chen and its associated beliefs have also been observed in New Zealand,[208] deserves close attention.[209]

Second, navigation developed astonishingly early in this area. Before the construction of plank canoes and outriggers, bamboo rafts had already been capable of sailing the outer seas, as convincingly shown by Ling Shun-sheng.[210] It is not surprising, then, that at the Marianas we have obtained a fairly early C-14 date (1527 ± 200 B. C.),[211] and that Pacific voyages were early and numerous.

Third, as mentioned earlier, Late Neolithic culture in North China was probably characterized by its carpentry and above all by its wood-carving. If we take the view that the wood-carving tradition was part of the heritage handed down from the Lung-shan to the proto-Malayo-Polynesians, then it is by no means strange that we can observe parallels in wood-carving between the American northwest coast and the Polynesian Maoris.

Fourth, the proto-Malayo-Polynesians definitely possessed the art of making pottery, although their basketry was probably more highly developed. Among some of their descendants, pottery was no longer made, possibly because pottery came to be supplanted by bamboo and other sorts of container or because of environmental limitations.[212]

Fifth, in the proto-Malayo-Polynesian culture inventory, we observe a number of items of trans-Pacific interest. Among them the following are the most interesting: sailed rafts, the poncho, the blowgun, racing as part of the initiation ceremony, divination by entrails, and the ancestral-worship/secondary-burial complex. Carter's paper on Asian-American pre-Columbian communications with regard to domesticated plants [213] deserves some reconsideration.

Sixth and last, I seem to be in disagreement with many students on the Malayo-Polynesian kinship system [214] in that I would characterize their kinship groups as unilinear rather than bilateral. There are several reasons for doing so. First, the agriculturalization of Central and South China, as will be shown later, I regard as resulting from primary diffusions from the north, and we have reasons to assume the existence of unilinear kinship groups in Neolithic North China. Secondly, faint indications of the planned and the segmented patterns of community living have been observed at So-chin-ts'un (Nanking), Kuang-tze (Fukien), and Nan-sha-k'eng (SOS) (Hai-feng). Thirdly, the past existence of dog and snake totems among the ancient inhabitants of South China is fairly certain. Finally, the name-linkage system indicates the unilinear way of reckoning descent. This viewpoint, however, is not irreconcilable with the findings of Murdock and others who believe in a basically bilateral way of kinship reckoning among

the proto-Malayo-Polynesians, if we do not assume a uniformity of culture both in time and area.

Summary and Conclusions

It is highly probable that in early post-glacial times China was covered with dense forests or parklands in the north and that North China had a more humid environment and possibly warmer climate than it has today. Mesolithic hunter-fishers continued the Upper Palaeolithic tradition in North China and roamed in the Southwest. At some point of time the Neolithic revolution began in the Middle Yellow River Valley, and the Neolithic way of life continued to the beginning of Bronze Age civilizations sometime in the early second millennium B. C. in Honan and somewhat later in other areas.

Secondary and possibly primary diffusions of the Neolithic cultures into Mongolia, Manchuria, and Siberia took place after the first revolution in the Huangho region and continued thereafter. Complete " Neolithicization " in terms of basic subsistence patterns was achieved only at the Sino-Mongolian borderland and on the southern Manchurian plains; while further north, possibly because of environmental limitations, only some Neolithic cultural items, such as cord-marked pottery, polished stone implements, slate knives and arrowheads, etc. were introduced into the region. The Circumpolar Age is as indebted to the Chinese Neolithic in its many cultural manifestations as to western Asian and eastern European donations.

Through at least three routes, the valleys of the Chialing, Han and Huai Rivers, Neolithic cultures were brought into Central and South China. If we may generalize about the association of Hoabinhian axes with proto-Melanesoid skulls in Indo-China and Malaya [215] over the rest of Southeast Asia, then we must consider the " Neolithicization " of Central and South China as primary diffusions in the European sense of the term, although absorption of the native cultures must have occurred as is indicated by the distinctive local styles. This conclusion is essentially in agreement with the assumptions of the physical anthropologists who see the Mongoloid expansion in eastern Asia as occurring at

a recent date and with rapid speed as the result of the spread of an agricultural mode of life.[216] A new set of problems is posed here: Was there an independent southeastern Asiatic Neolithic Complex? What were its connections with the north? What is the relationship between the proto-Malayo-Polynesians and the early Sino-Tibetans? What bearing does the thesis on Tai and Kadai brought forth by Paul Benedict and Joseph Greenberg have on these problems? These questions have been tentatively considered elsewhere [217] and will not be discussed here.

This brief outline of Chinese prehistory in Pacific perspective has been made possible by recent progress in ethnological research and by the growing, but still fragmentary, archaeological information brought to light in Central and South China. This paper has been written in answer to a growing demand by Oceanists and Americanists for a recapitulation of Chinese prehistory, and many of the speculations I have made here are admittedly open to later correction. The following are the main problems for future solution.

First of all, we need an absolute chronological framework. All the guesswork on the dating of Chinese Neolithic cultures is based chiefly on typological grounds. At least several dozen radio-carbon dates are necessary before a historical synthesis is possible. It would, however, be interesting now to make a guess on the potential time range of the Chinese Neolithic or on a date for the beginning of the Neolithic revolution in this part of the world. The following are some C-14 dates now available for various Pacific areas: North American Woodland: 4400 ± 260 (average); [218] Jōmon in Japan: 5100 ± 400; [219] traditional beginning of the Shang dynasty: 1766 B. C.; Geometric in South China: 3125 ± 150; [120] Saipan in the Marianas: 3479 ± 200; [221] Huaca Prieta in Peru: 4298 ± 300.[222] These dates, together with considerations along other lines, suggest the following conclusions: (1) If we accept the view that the Early Chinese Neolithic is one of the sources of Northern Maritime pottery, then we must make ample allowance for its beginning before 3000 B. C., the date for Japanese corded pottery, and before the "first half of 3rd millennium," the date for the earliest Siberian "Neolithic." [223] We must also make allowance for the time necessary for the

diffusion of cord-marked pottery to New York State, where it appeared about 2500 B. C. (2) The examples of the Near East and of Nuclear America suggest that roughly three thousand years are necessary for a culture to develop from the Neolithic revolution to urbanization, and, therefore, three thousand years may have elapsed before the Chinese entered their Bronze Age civilization at about 2000 B. C. (3) The gourd from Huaca Prieta seems to suggest early trans-Pacific contact between the Peruvians and the Malayo-Polynesians before 2300 B. C. Since the great development of the proto-Malayo-Polynesians does not seem to have started in Southeast Asia until the Lungshanoid stage, the First Neolithic in this latter area must be well before 3000 B. C. The date of 1500 B. C. for Saipan (below which there is still a deep deposit) makes this guess much less fantastic. Taking all these points into consideration, we may put the beginning of the Chinese Neolithic revolution somewhere between 4000-5000 B. C., possibly even earlier.

We are then confronted with the problem of the beginning of agriculture in North China and of the crops first cultivated. Stimulus diffusion from western Asia is one way of looking at the matter and is a highly possible solution; but before the dating of the Chinese Neolithic is established, any guess on this point is unsafe. The derivation of agriculture in Southeast Asia from the Huangho offers no problem, but how much Southeast Asia's agricultural complex was its own development and how much was pure importation remains to be determined.

Numerous blank areas exist which are sometimes the key to many of our problems. For instance, Mongolia is not well known archaeologically, or at least findings there have not been widely published. The little known Middle Yangtze region must not only be the key area for studying the proto-Malayo-Polynesians, it is also, on the one hand, vital to the solution of the relationship between Yin and South China, since Early Yin style bronzes have been recently reported from Yang-chia-wan in Huang-p'i, Hupei,[224] and on the other hand, Hard Geometric sherds have been found in an Early Yin stratum at Erh-li-kang at Cheng-chou, Honan.[225]

Toward the end of the Neolithic stage, we come to the problem of urbanization in China and Southeast Asia. Early Bronze Age

sites have been located extensively in North China, but data on the initial transition and the changes in settlement and community patterns are still lacking.

Finally we are forced to face some theoretical considerations. Among the mechanisms of cultural evolution and differentiation, which were operating in this part of the world? Whatever the relationship with the West, we seem to have here a basically Oriental pattern from the start, and this Oriental culture had great potentiality of growth and great elasticity of development. China as a culture center is comparable to the Near East; and the whole Pacific area, with China as its center, constitutes a distinctive and resourceful cultural area by itself. China, the Pacific, and the Americas constitute an interesting ground for the study of patterns and mechanisms of cultural evolution.

The following charts summarize the time-space integration of Chinese prehistory and may serve for convenient reference.

TABLE 5

TIME-SPACE INTEGRATION OF CHINESE PREHISTORY

THE YELLOW RIVER BASIN [226]

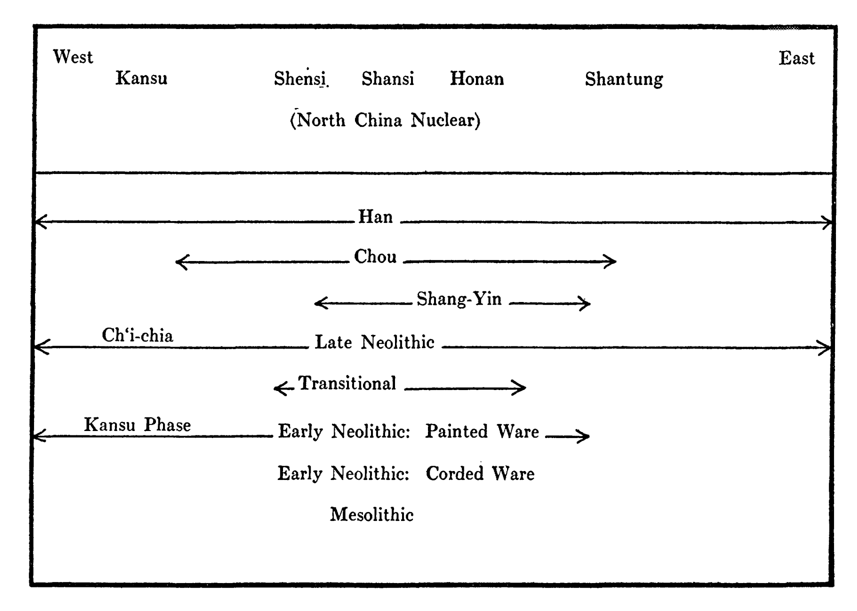


TABLE 6
TIME-SPACE INTEGRATION OF CHINESE PREHISTORY
THE NORTH-SOUTH PROFILE [227]

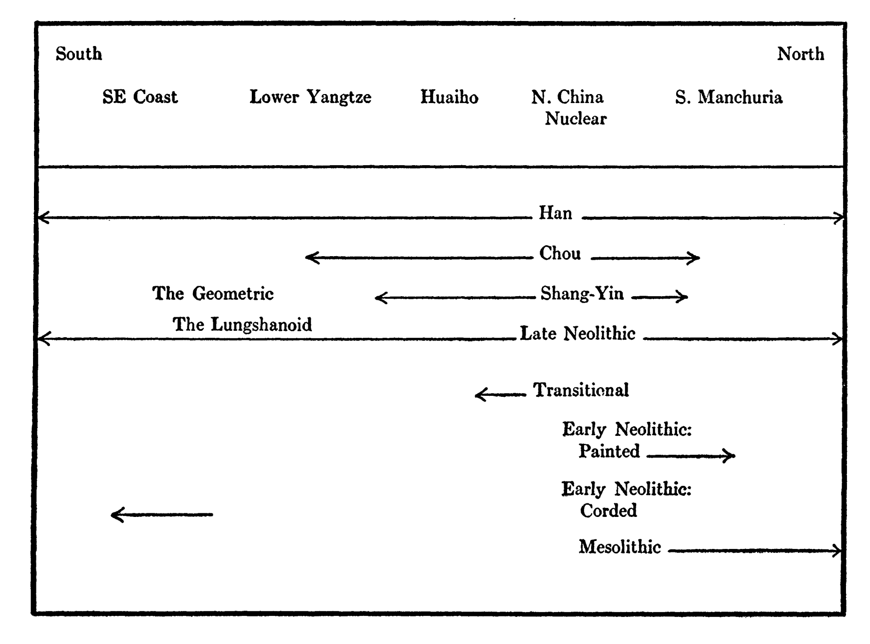
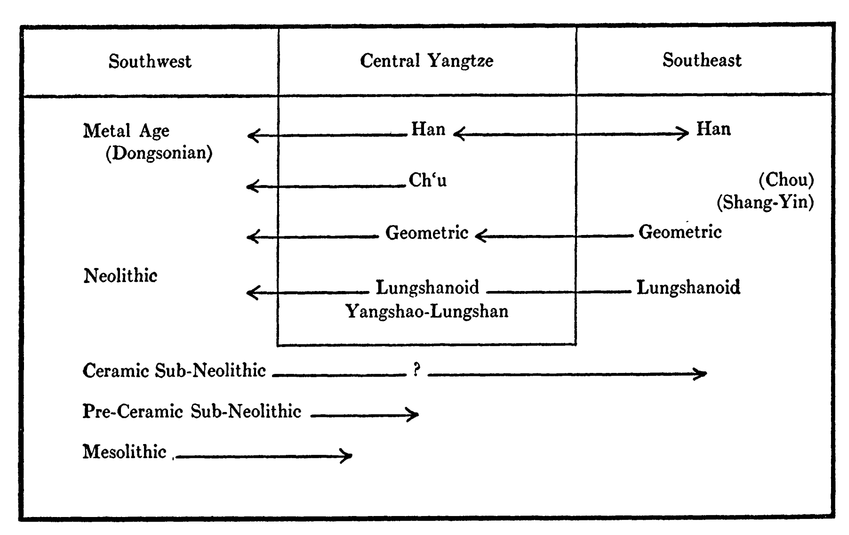


TABLE 7
TIME-SPACE INTEGRATION OF CHINESE PREHISTORY
CENTRAL AND SOUTH CHINA [228]



NOTES

[1] New information which has become available since this paper was written early in 1958 confirms rather than alters the view expressed here, and therefore only minor changes were made when the final draft was prepared. The author is indebted to the Harvard-Yenching Institute for its financial support for his studies in connection with the present paper in 1957-1958 and to its library where he obtained all of his data published in China since 1949. To the following scholars, the author acknowledges his gratitude for their criticisms and suggestions on this article: Lauristan Ward, Hallam L. Movius, Jr., Gordon R. Willey, John Pelzel, Lien-sheng Yang, and John L. Bishop of Harvard University; Robert J. Braidwood of the University of Chicago; and Kenneth Starr of the Chicago Museum of Natural History. Mr. Karl Heider's editorial assistance is also gratefully acknowledged.

The following abbreviations for titles of periodicals other than those listed on the back cover of this journal will be used:

AA	*American Anthropologist*, Menasha
AO	*Tōhō kōkogaku sōkan* 東方考古學叢刊 (*Archaeologia Orientalis*), Tokyo and Kyoto
BCA	*Kuo-li T'ai-wan ta-hsüeh wen-shih-chieh-hsüeh pao* 國立台灣大學文史哲學報 (*Bulletin of the College of Arts, National Taiwan University*), Taipei
BDAA	*Kuo-li T'ai-wan ta-hsüeh k'ao-ku jen-lei-hsüeh-k'an* 國立台灣大學考古人類學刊 (*Bulletin of the Department of Archaeology and Anthropology, National Taiwan University*), Taipei
BGSoC	*Bulletin of the Geological Society of China*, Peiping
BIE	*Min-tsu-hsüeh-yen-chiu-so chi-k'an* 民族學研究所集刊 (*Bulletin of the Institute of Ethnology, Academia Sinica*), Taipei
CJA	(*Chung-kuo*) *K'ao-ku hsüeh-pao* (中國)考古學報 (*The Chinese Journal of Archaeology*), Nanking and Peiping
HKN	*The Hongkong Naturalist*, Hongkong
KKTH	*K'ao-ku t'ung-hsün* 考古通訊 [*Archaeological Correspondence*], Peiping
MGSuC	*Memoirs of the Geological Survey of China*, Peiping
P3FEPC	*Proceedings of the 3rd Far Eastern Prehistory Congress*, Singapore
P4FEPC	*Proceedings of the 4th Far Eastern Prehistory Congress*, Quezon City
PS	*Palaeontologia Sinica*, Peiping
SWJA	*Southwestern Journal of Anthropology*, Albuquerque
WWTKTL	*Wen-wu-ts'an-k'ao-tzu-liao* 文物參考資料 [*Reference Materials on Documents and Antiquities*], Peiping

Some of the viewpoints advanced in this paper have been elaborated elsewhere: Chang Kwang-chih, "A Brief Survey of the Archaeology of Formosa," *SWJA* 12 (1956).371-386; "中國新石器時代文化斷代," *CYYY* 30 (1959).259-309; "華南史前民族文化史提綱," *BIE* 7 (1959).43-103; "Peoples in China," *China Today* 2 (Taipei, 1959) 2.40-51. For different viewpoints, the reader's attention is

called to the following recent books: Li Chi, *The Beginnings of Chinese Civilization* (Seattle, 1957); Cheng Te-k'un 鄭德坤, *Prehistoric China* (Cambridge, 1959); and Walter A. Fairservis, Jr., *The Origins of Oriental Civilization* (New York, 1959).

[2] Chang Kwang-chih and Richard K. Beardsley, "Area 17: Far East," *COWA Survey* (Cambridge, 1959).1.

[3] Robert von Heine-Geldern, "Urheimat und früheste wanderungender Austronesier," *Anthropos* 27 (1932).543-619.

[4] W. C. McKern, "An Hypothesis for the Asiatic Origin of the Woodland Culture Pattern," *American Antiquity* 3 (1937).138-143.

[5] Gordon R. Willey, "The Prehistoric Civilizations of Nuclear America," *AA* 57 (1955).582, 585; Paul Tolstoy, "Some Amerasian Pottery Traits in North Asian Prehistory," *American Antiquity* 19 (1953).25-32.

[6] Ling Shun-sheng 凌純聲, "The Bone-washing Burial Custom and Ancestral Bone Worship in Southeast Asia," *Chung-yang-yen-chiu-yüan-yüan-k'an* 中央研究院院刊 2 (Taipei, 1955).175-194; "古代中國與太平洋區的犬祭" ("Dog Sacrifice in Ancient China and the Pacific Area"), *BIE* 3 (1957).1-16.

[7] J. G. D. Clark, *Archaeology and Society* (London, 1957); Chang Kwang-chih, "Study of the Neolithic Social Grouping: Examples from the New World," *AA* 60 (1958).298-334.

[8] P. Teilhard de Chardin, "Notes on Continental Geology," *BGSoC* 56 (1936/7).219; H. L. Movius, Jr., "The Lower Palaeolithic Cultures of Southern and Eastern Asia," *Transactions of the American Philosophical Society* 38 (1949).348.

[9] Cf. Gad Rausing, "On the Climate of North China in Earlier Times," *Bulletin de la Société des Lettres de Lund* 3 (1956).191-203.

[10] J. G. D. Clark, *Prehistoric Europe* (London, 1952).11

[11] J. G. Andersson, "Prehistoric Sites in Honan," *BMFEA* 19 (1947).22.

[12] Li Chi, "Diverse Background of the Decorative Art of the Yin Dynasty," *Chung-yang-yen-chiu-yüan-yüan-k'an* 2 (1955).119-129.

[13] J. G. Andersson, "Essays on the Cenozoic of Northern China," *MGSuC*, Ser. A, 3 (1923).90; "Researches into the Prehistory of the Chinese," *BMFEA* 15 (1943).35-40; Arthur de Carle Sowerby, "The Natural History of China," *JNCBRAS* 53 (1922).3; Rausing, "On the Climate . . . ," 195-6; Li Chi *et al*, "城子崖" ("Ch'eng-tzu-yai"), *Chung-kuo k'ao-ku pao-kao-chi* 中國考古報告集 (*Archaeologia Sinica*) 1 (Nanking, 1934).91; P. Teilhard de Chardin and C. C. Young, "On the Mammalian Remains from the Archaeological Site of Anyang," *PS*, Ser. C, 12 (1936); F. S. Drake, "Neolithic Site at Hung Chia Lou, Shantung, N. China," *P4FEPC* 1 (1956).133-149.

[14] Rausing, "On the Climate . . . ," 196; Li Chi *et al*, "Ch'eng-tzu-yai," 91.

[15] Ch'en Meng-chia 陳夢家, "商代的神話與巫術" ["Myths and Magic of the Shang Dynasty"], *YCHP* 20 (1936).497-8; Rausing, "On the Climate . . . ," 198-201.

[16] Andersson, "Researches . . . ," 130; "Prehistoric Sites in Honan," 78.

[17] Andersson, "Researches . . . ," 21-2.

[18] *Ibid.*, 7, 20-1; Andersson, "Topographical and Archaeological Studies in the Far East," *BMFEA* 11 (1939).30.

[19] John Maringer, "Contribution to the Prehistory of Mongolia," *Reports from the Scientific Expedition to the Northwestern Provinces of China under the Leadership of Dr. Sven Hedin* 7 (Stockholm, 1950).207-8; N. C. Nelson, "The Dune Dwellers of the Gobi," *Natural History* 26 (1926).250.

[20] Liang Ssu-yung 梁思永, "昂昂溪史前遺址" [" A Prehistoric Site near Ang-ang-hsi "], *CYYY* 4 (1932) .5; "熱河查不干廟林西雙井赤峯等處所採集之新石器時代石器與陶片" [" Neolithic Stone Implements and Potsherds Collected Near Ch'a-pu-kan-miao, Lin-hsi, Shuang-ching, and Ch'ih-feng in Jehol "], *CJA* 1 (1936) .9.

[21] Chang Kwang-chih, " New Light on Early Man in China," *Asian Perspectives* 2 (1958) 2.51-55.

[22] W. C. Pei 裴文中, " The Upper Cave Industry of Choukoutien," *PS*, Ser. D. 9 (1939) .1-41; " The Upper Cave Fauna of Choukoutien," *PS*, Ser. C, 10 (1940) .1-84; H. L. Movius, " Palaeolithic Archaeology in Southern and Eastern Asia, Exclusive of India," *Journal of World History* 2 (1955) .257-282, 520-553.

[23] N. C. Nelson, " Notes on the Archaeology of the Gobi," *AA* 28 (1926) .305-308; " The Dune Dwellers. . . ."

[24] Maringer, " Contribution to the Prehistory of Mongolia."

[25] E. g., P. Teilhard de Chardin, *Early Man in China* (Peiping, 1941) .78-82.

[26] Chang Kwang-chih, " New Light . . ."; An Chih-min 安志敏 and Wu Ju-tso 吳汝祚, "陝西朝邑大荔沙苑地區的石器時代遺存" [" Stone Age Remains in Chao-i and Ta-li, Shensi "], *CJA* 17 (1957) .1-12.

[27] W. C. Pei, " On a Mesolithic (?) Industry of the Caves of Kwangsi," *BGSoC* 14 (1935) .393-408.

[28] Bien Mei-nien 卞美年 and Chia Lan-po 賈蘭坡, " Cave and Rock-shelter Deposits in Yunnan," *BGSoC* 18 (1938) .325-348.

[29] Cheng Te-k'un, *Archaeological Studies in Szechwan* (Cambridge, 1957).

[30] Young Chun-chien 楊鍾健 and Pei Wen-chung, " On a Collection of Yangshao Cultural Remains from Mienchih Hsien, Honan," *BGSoC* 13 (1934) .305-318; *KKTH* (1957) 4.1-9.

[31] Li Chi, 西陰村史前遺存 [*Prehistoric Remains at Hsi-yin-ts'un*] (Peiping, 1927).

[32] Liu Yao 劉燿 and Chi Yen-pei 祁延霈, 日照兩城鎮發掘報告 [*Report on Excavations at Liang-ch'eng-chen, Jih-chao*] (n. d.).

[33] Cf. R. J. Braidwood and L. S. Braidwood, " The Earliest Village Communities of Southwestern Asia," *Journal of World History* 1 (1953) .278-310. I owe to them and to Julian Steward the term " incipient," although Braidwood has abandoned the use of " Neolithic."

[34] *KKTH* (1955) 3.15; Chi Ssu-ho 齊思和, "毛詩穀名考" [" On the Names of Grains in *Mao Shih* "], *YCHP* 36 (1949); *KKTH* (1959) 2.73.

[35] Amano Motonosuke 天野元之助, "殷代の農業とその社會構造" (" On Agriculture and the Social Structure in the Yin Dynasty "), *Shigaku Kenkyū* 史學研究, 62 (1956) .5.

[36] Carl W. Bishop, " The Neolithic Age in Northern China," *Antiquity* 28 (1933) .395.

[37] *Ibid.*, 395-6.

[38] Andersson, " Prehistoric Sites in Honan," 21-2.

[39] Amano, *op. cit.*, 5.

[40] Bishop, *op. cit.*, 395.

[41] *Ibid.*, 396.

[42] *CJA* 16 (1957) .9.

[43] Andersson, " Researches . . . ," 43; Margit Bylin-Althin, " The Sites of Ch'i Chia P'ing and Lo Han T'ang in Kansu," *BMFEA* 18 (1946) .458.

[44] J. G. Andersson, " An Early Chinese Culture," *BGSuC* 5 (1923) .32.

[45] Andersson, "Researches . . . ," 43.
[46] *Ibid.*, 43; Bylin-Althin, *op. cit.*, 458.
[47] Andersson, "An Early Chinese Culture," 26; *KKTH* (1959) 2.73.
[48] Li Chi, *Prehistoric Remains . . .*, 22-3.
[49] *CJA* 16 (1957) .9; Bishop, *op. cit.*, 396; Andersson, "Researches . . . ," 43; Bylin-Althin, *op. cit.*, 458; Rausing, *op. cit.*, 195.
[50] *KKTH* (1955) 3.15.
[51] *KKTH* (1956) .2.30.
[52] Andersson, "Researches . . . ," 43.
[53] *KKTH* (1955) 3.7.
[54] *KKTH* (1959) 2.71.
[55] *KKTH* (1958) 11.68.
[56] *KKTH* (1958) 2.1-5.
[57] *KKTH* (1956) 2.37.
[58] *KKTH* (1958) 11.68.
[59] For the terminology of settlement and community patterns, see Chang Kwang-chih, "Study of the Neolithic Social Grouping . . ."; *The Circumpolar Settlement and Community Patterns* (Cambridge, 1958).
[60] Andersson, "Researches . . . ," 98-9.
[61] *KKTH* (1956) 2.28.
[62] *KKTH* (1955) 3.7-16; (1956) 2.23-30; (1956) 6.30-5; Bishop, *op. cit.*; Bylin-Althin, *op. cit.*; *WWTKTL* (1955) 9.58-64; Andersson, "Researches . . ."; "Prehistoric Sites in Honan"; *CJA* 1 (1936) .69-89; *KKTH* (1958) 11.68; (1959) 2.71; (1958) 2.1-5; (1956) 5.55-57.
[63] *KKTH* (1955) 3.8-9.
[64] *KKTH* (1958) 9.pl. 1.
[65] *WWTKTL* (1955) 9.60-1.
[66] Chang Kwang-chih, "Study of the Neolithic Social Grouping. . . ."
[67] E. g., *KKTH* (1959) 2.73-4.
[68] Andersson, "Researches. . . ."
[69] *Ibid.*; B. Karlgren, "Some Objects of Prehistoric China," *BMFEA* 14 (1942) .65-70.
[70] Andersson, "Researches . . . ," 130.
[71] *Ibid.*, 252-3.
[72] *CJA* 16 (1957) .19; Andersson, "Researches . . . ," 48.
[73] *KKTH* (1956) 2.41-3.
[74] *CJA* 15 (1957) .5.
[75] Andersson, "Prehistoric Sites in Honan," 54.
[76] *KKTH* (1956) 2.35; (1955) 3.12.
[77] *KKTH* (1956) 5.5.
[78] *KKTH* (1955) 3.15.
[79] Andersson, "Prehistoric Sites in Honan," 68-9.
[80] *CJA* 15 (1957) .6.
[81] Tung Kuang-chung 董光忠, "山西萬泉石器時代遺址發掘之經過" ["An Account of the Excavations at the Stone Age Site in Wan-ch'üan, Shansi"], *Shih-ta-yüeh-k'an* 師大月刊 3 (Peiping, 1933) .105-6.
[82] *KKTH* (1956) 2.29.
[83] *KKTH* (1956) 6.32.
[84] *CJA* 15 (1957) .5.

[85] Bylin-Althin, *op. cit.*, 431.

[86] Cf. Lauristan Ward, "The Relative Chronology of China through the Han Period," *Relative Chronologies in Old World Archaeology* (Chicago, 1954).133.

[87] Hsü Ping-chang 徐炳昶, "陝西最近發現之新石器時代遺址" ["Neolithic Sites Recently Found in Shensi"], *Pei-p'ing yen-chiu-yüan yüan-wu-hui-pao* 北平研究院院務彙報 7 (1936).6.

[88] *KKTH* (1956) 3.50-4.

[89] Li Chi, "小屯陶器" ["Hsiao-t'un Pottery"], *Chung-kuo k'ao-ku pao-kao-chi* 2 (Taipei, 1956).24.

[90] Andersson, "Researches . . . ," 100; *KKTH* (1956) 5.4; (1956) 6.9-19; (1955) 1.28-30; *CJA* 16 (1957).7-21; G. D. Wu 吳金鼎, *Prehistoric Pottery in China* (London, 1938); *KKTH* (1958) 9.39.

[91] Andersson, "Researches . . . ," 76.

[92] Mizuno Seiichi 水野清一, "Prehistoric China: Yang-shao and Pu-chao-chai," *P4FEPC* 1 (1956).89-98; "中國先史時代研究の展望" ["Prospects of Prehistoric Studies in China"], *Tōyōshi-Kenkyū* 東洋史研究 16 (1957) 3.1-39.

[93] Sekino Takeshi 關野雄, "On the Black and the Grey Pottery of Ancient China," *P4FEPC* 1 (1956).103-114.

[94] Andersson, "Prehistoric Sites in Honan," 22-4, 30-1.

[95] *Ibid.*, 7-8.

[96] Li Chi, *Prehistoric Remains . . .*; Liang Ssu-yung, "New Stone Age Pottery from the Prehistoric Site at Shi-Yin Tsun, Shansi, China," *Memoirs of the American Anthropological Association* 37 (1930).

[97] *KKTH* (1956) 5.1-11.

[98] *CJA* 16 (1957).13.

[99] *KKTH* (1956) 2.53.

[100] Hsia Nai 夏鼐, "河南成皋廣武區考古記略" ["A Brief Account of the Archaeological Investigations in the Kuang-wu Region of Ch'eng-kao, Honan"], *Ko-hsüeh t'ung-pao* 科學通報 2 (1951).728.

[101] *KKTH* (1958) 11.69.

[102] *KKTH* (1959) 2.75.

[103] *KKTH* (1958) 11.69.

[104] *KKTH* (1958) 1.5.

[105] Lungshan over Yangshao stratification has been observed at the following localities in North China: *Honan*: Hou-kang, Kao-ching-t'ai-tzu, T'ung-lo-chai 同樂寨 (Anyang), Liu-chuang 劉莊, Ta-lai-tien, Ts'ao-tien 草店, Feng-huang-t'ai 鳳凰台, Lu-t'ai 蘆台 (Chün-hsien 濬縣), Shang-tien 上店 (I-yang 伊陽), and Miao-ti-kou (Shan-hsien); *Shensi and Shansi*: a series of localities in the Ching and Wei Valleys, K'ai-jui-chuang 開瑞莊 (Sian), Sanmen Gorge Reservoir sites, and several localities in southern Shansi; *Kansu*: Yang-wa-wan 陽窪灣 (Ning-ting 寧定), Ssu-p'ing 寺坪 (Hun-yüan-hsien 渾源縣), Hsi-shan-p'ing 西山坪 (T'ien-shui-hsien 天水縣), Ch'i-li-tun 七里墩 (T'ien-shui-hsien), and Liu-wei-chia 劉未家 (Yung-ching-hsien 永靖縣). For reference, see: *CJA* 16 (1957).7-21; *KKTH* (1957) 1.11-13; (1958) 1.4-7; (1957) 4.1-9; *CYYY* 27 (1956).205-323; *KKTH* (1956) 5.1-11; *WWTKTL* (1956) 10.22-24; *CJA* 3 (1948).101-117; *KKTH* (1956) 6.9-19; (1958) 5.4; (1958) 7.12; Liang Ssu-yung, "後岡發掘小記" ["Notes on the Hou-kang Excavations"], *An-yang fa-chüeh pao-kao* 安陽發掘報告 4 (1933).609-625.

[106] *KKTH* (1956) 6.9-19.

[107] *CJA* 16 (1957) .7-21; *KKTH* (1956) 5.6; *KKTH* (1955) 1.30.

[108] *CJA* 16 (1957) .7-21; G. D. Wu, *op. cit.*; *WWTKTL* (1956) 8.41-9.

[109] Liang Ssu-yung, "The Lungshan Culture—A Prehistoric Phase of Chinese Civilization," *Proceedings of the Sixth Pacific Science Congress* 4 (1939) .69-79.

[110] Li Chi *et al,* "Ch'eng-tzu-yai," 91.

[111] Bylin-Althin, *op. cit.*, 457-8.

[112] Kanazeki Takeo 金關丈夫 *et al,* "羊頭窪" ("Yang-t'ou-wa"), *AO*, Ser. B, 3 (1942).

[113] Rausing, *op. cit.*, 195.

[114] Andersson, "Prehistoric Sites in Honan," 100.

[115] Kanazeki, *et al, op. cit.*, 95.

[116] Bylin-Althin, *op. cit.*, 385.

[117] *KKTH* (1956) 2.38.

[118] *KKTH* (1956) 2.52-3.

[119] Liang Ssu-yung, "Notes on the Hou-kang Excavations," 619-20.

[120] *CJA* 1 (1936) .75.

[121] *WWTKTL* (1955) 12.20-41; Li Chi *et al,* "Ch'eng-tzu-yai"; Bylin-Althin, *op. cit.*; *KKTH* (1956) 2.51-3; *CJA* (1958) 1.25-42.

[122] Li Chi *et al,* "Ch'eng-tzu-yai"; Shih Chang-ju 石璋如, "河南安陽後岡的殷墓" ["Yin Dynasty Tombs at Hou-kang in Anyang, Honan"], *Liu-t'ung pieh-lu* 六同別錄 1 (Li-chuang 李莊, 1945) .3.

[123] E. g., *KKTH* (1958) 11.68.

[124] Kanazeki *et al, op. cit.*, 24-5.

[125] Liang Ssu-yung, "Notes on the Hou-kang Excavations," 619-20.

[126] *KKTH* (1958) 1.5.

[127] *KKTH* (1958) 11.69.

[128] *KKTH* (1959) 2.75.

[129] *CJA* 16 (1957) .7-21; *WWTKTL* (1956) 8.41-9.

[130] Robert von Heine-Geldern, "China, Die Ostkaspische Kultur und die Herkunst der Schrift," *Paideuma, Mitteilungen zur Kulturkunde* 4 (1950) .51-92; "The Origin of Ancient Civilizations and Toynbee's Theories," *Diogenes* 13 (1956) .81-99.

[131] Li Chi, "Diverse Background. . . ."

[132] Li Chi, "Hsiao-t'un Pottery," 24.

[133] G. D. Wu, *op. cit.*; *WWTKTL* (1956) 6.9-19; *CJA* 16 (1957) .7-21; *KKTH* (1958) 1.4-7.

[134] *CJA* 10 (1955) .27-51; *CJA* 16 (1957) .19; Andersson, "Researches . . . ," 48.

[135] Chang Kwang-chih, *Chinese Urbanization* (unpublished ms.).

[136] Chang Kwang-chih, *Prehistoric Settlements in China* (Doctoral dissertation in preparation, Harvard University).

[137] Maringer, *op. cit.*, 13.

[138] *Ibid.*, 206-7.

[139] *Ibid.*, 201.

[140] N. Nelson, "The Dune Dwellers . . ."; "Notes on the Archaeology of the Gobi"; "Archaeology of Mongolia," *Congrès International des Sciences Anthropologiques et Ethnologiques* 2 (Copenhagen, 1939) .259-262; Maringer, *op. cit.*; Egami Namio 江上波夫 and Mizuno Seiichi, "內蒙古長城地帶" ["Inner Mongolia and the Region around the Great Wall"]. *AO*, Ser. B, 1 (1935).

[141] Liang Ssu-yung, "A Prehistoric Site. . . ."

[142] *CJA* 7 (1954) .61-75.

[143] André Leroi-Gourhan, "Archéologie du Pacifique-Nord," *Travaux et Mémoires de l'Institut d'Ethnologie* 47 (Paris, 1946).

[144] Gutorm Gjessing, "Circumpolar Stone Age," *Acta Arctica* 2 (Copenhagen, 1944); Marija Gimbutas, "The Prehistory of Eastern Europe. Part 1. Mesolithic, Neolithic, and Copper Age Cultures in Russia and the Baltic Area," *Bulletin, American School of Prehistoric Research* 20 (Cambridge, 1956); Chester Chard, "An Outline of the Prehistory of Siberia. Part 1. The Pre-Metal Periods," *SWJA* 14 (1958).1-33.

[145] Chard, *op. cit.*, 23-4.

[146] Albert C. Spaulding, "Northeastern Archaeology and General Trend in the Northern Forest Zone," *Papers of the Robert S. Peabody Foundation for Archaeology* 3 (Andover, 1946).

[147] Chang Kwang-chih, *The Circumpolar Settlement. . . .*

[148] Charles E. Borden, *Culture Sequence in the Fraser Delta Region* (Lecture delivered at the Peabody Museum, Harvard University, 1956).

[149] Li Chi, "Diverse Background. . . ."

[150] Egami and Mizuno, *op. cit.*; Maringer, *op. cit.*; *KKTH* (1955) 5.9-13; *CJA* 15 (1957).9-20; *CJA* 1 (1936).1-67.

[151] *KKTH* (1955) 6.13-16; (1956) 6.19-25.

[152] *KKTH* (1955) 2.5-12; *CJA* 17 (1957).31-9.

[153] *CJA* 1 (1936).1-67.

[154] Hamada Kōsaku 濱田耕作 and S. Mizuno, "赤峰紅山後" ["Hung-shan-hou, Ch'ih-feng"], *AO*, Ser. A, 6 (1938).

[155] *KKTH* (1955) 6.13-16; (1956) 6.19-25.

[156] *KKTH* (1955) 5.9-13; *CJA* 15 (1957).9-20.

[157] J. G. Andersson, "The Cave Deposit at Sha Kuo T'un in Fengtien," *PS*, Ser. D, 1 (1923).1.

[158] Chang Kwang-chih, 中國東海岸史前文化之分布與移動 [*Distribution and Diffusion of the Prehistoric Cultures in the Eastern Coastal Area of China*] (Taipei, 1954).166-7.

[159] Kanazeki *et al, op. cit.*, 81.

[160] *Ibid.*

[161] *KKTH* (1955) 2.5-12; *CJA* 17 (1957).31-9; *KKTH* (1957) 1.6-10; (1956) 6.25-30; *CJA* 15 (1957).43-52.

[162] *CJA* 17 (1957).31-9.

[163] *Ibid.*; *KKTH* (1956) 6.25-30.

[164] Cheng Te-k'un, *op. cit.*

[165] Chang Kwang-chih, "A Brief Survey . . . ," 382; "台灣史前石刀之分類及其系統" ["A Genetic Classification of Stone Knives on Formosa"], *T'ai-wan feng-t'u* 台灣風土 161 (1954).

[166] This data was personally communicated to me by Prof. Ling Shun-sheng.

[167] *KKTH* (1958) 1.56-8.

[168] *KKTH* (1956) 3.11-21.

[169] *KKTH* (1956) 3.21-4.

[170] *CJA* 12 (1956).33-68.

[171] *KKTH* (1956) 5.12-5; Hsia Nai, Ch'en Kung-jou 陳公柔 and Wang Chung-shu 王仲殊, 長沙發掘報告 [*Report on Excavations in Ch'ang-sha*] (Peiping, 1957).

[172] Shih Chang-ju, "國立中央研究院歷史語言研究所考古年表" ("Historic Table of the Archaeological Work of the Institute of History and Philology,

Academia Sinica"), 中央研究院歷史語言研究所專刊 [*Memoirs of the Institute of History and Philology, Academia Sinica*] 35 (1952).

[173] *CJA* 16 (1957).16.

[174] *WWTKTL* (1954) 6.25-31.

[175] *CJA* 2 (1947).83-120; *WWTKTL* (1955) 11.67-73.

[176] *WWTKTL* (1954) 6.25-31.

[177] *CJA* 9 (1955).13-23; 16 (1957).16-7.

[178] *CJA* 15 (1957).21-30; 2 (1947).179-250.

[179] *CJA* 15 (1957).21-30; *KKTH* (1955) 5.14-9; *CJA* 2 (1947).179-250.

[180] *CJA* 15 (1957).21-30.

[181] *Ibid.*

[182] *CJA* 17 (1957).13-30.

[183] *Ibid.*; *CJA* 16 (1957).7-21; *KKTH* (1955) 1.32-3; Yin Huan-chang 尹煥章, 華東新石器時代遺址 [*Neolithic Sites in Eastern China*] (Shanghai, 1955).

[184] Yin Huan-chang, *op. cit.*; *CJA* 16 (1957).7-21; *KKTH* (1955) 1.32-3; *WWTKTL* (1955) 8.48-59; *CJA* (1958) 1.7-23; *KKTH* (1957) 5.97-9.

[185] *WWTKTL* (1955) 8.68-76.

[186] *CJA* 16 (1957).7-21.

[187] *WWTKTL* (1955) 8.68-76; *KKTH* (1955) 5.22-5; *CJA* 16 (1957).7-21; Shih Hsin-keng 施昕更, 良渚 [*Liang-chu*] (Hangchow, 1938); *CJA* (1958) 2.5-15.

[188] *CJA* 16 (1957).7-21.

[189] *CJA* 15 (1957).31-5; 8 (1954).49-64; 15 (1957).37-42; Lin Hui-hsiang 林惠祥, Liang Hui-p'u 梁惠溥 and Liu Tse-kuang 劉澤光, "A Neolithic Site in Wuping, Fukien," *P3FEPC* (1940).133-140.

[190] *CJA* 10 (1955).53-68.

[191] *KKTH* (1958) 4.53-4

[192] Sung Wen-hsün 宋文薰 and Chang Kwang-chih, "台中縣水尾溪畔史前遺址發掘報告" ["Digging Prehistoric Sites on the Banks of the Shui-wei River in Tai-chung Prefecture"], *BDAA* 3 (1954).26-38; Shih Chang-ju and Sung Wen-hsün, "鐵砧山史前遺址試掘報告" ["Minor Excavations at T'ieh-chan-shan"], *BDAA* 8 (1956).35-50.

[193] Chang Kwang-chih, "A Brief Survey . . ."; Sung and Chang, *op. cit.*; Shih and Sung, *op. cit.*

[194] Tsuboi Kiyotari 坪井清足, "Feng-pi-t'ou: A Prehistoric Site in South Formosa that Yielded Painted and Black Pottery," *P4FEPC* 1 (1956).277-94.

[195] *KKTH* (1956) 4.4-11; (1957) 6.8-15; R. Maglioni, "Archaeological Finds in Hoifung. Part 1," *HKN* 8 (1938).208-244; "Archaeology in South China," *Journal of East Asiatic Studies* 2 (Manila, 1952).1-20; W. Schofield, "The Proto-historic Site of the Hongkong Culture at Shek Pek, Lantau, Hongkong," *P3FEPC* (1940).236-84; D. J. Finn, "Archaeological Finds on Lamma Island near Hongkong," *HKN* 3-7 (1932-36), Parts 1-13.

[196] *KKTH* (1956) 4.4-11; (1957) 6.8-15; Maglioni, "Archaeological Finds . . ."; "Archaeology . . ."; Finn, *op. cit.*

[197] Maglioni, "Archaeological Finds . . ."; "Archaeology. . . ."

[198] Cf. W. Schofield, "Implements of Palaeolithic Type in Hongkong," *HKN* 5 (1935).272-75; Maglioni, "Archaeological Finds . . . ," 211; Chang Kwang-chih, "A Brief Survey . . . ," 384.

[199] Chang Kwang-chih, "A Brief Survey . . . ," 384.

[200] Cf. *CJA* 8 (1954).63; Yin Huan-chang, "Neolithic Sites. . . ."

[201] *CJA* 8 (1954).65-94.

[202] *WWTKTL* (1955) 11.67-73.

[203] H. O. Beyer, "Preliminary Note (on eight papers on Chinese Archaeology and Early History)," *P4FEPC* 1 (1956) .86.

[204] Readers are referred to the archaeological and ethnological outline in my article, "華南史前民族文化史提綱" ("A Working Hypothesis for the Early Cultural History of South China"), *BIE* 7 (1959) .43-103, where I have included for the convenience of those interested in the early history of the proto-Malayo-Polynesians the archaeological findings recently made in South China and have incorporated these findings into the conventional picture given by ethnologists of ancient Malayo-Polynesian life. The following notes are based on that outline.

[205] Chang Kwang-chih, "A Working Hypothesis. . . ."

[206] *CJA* 8 (1954) .63; Yin Huan-chang, "Neolithic Sites. . . ."

[207] Finn, *op. cit.*, 12 (1936) .179; 13 (1936) .257.

[208] Roger Duff, *The Moa-hunter Period of Maori Culture* (Wellington, 1950).

[209] Chang Kwang-shih, "On the 'Polynesian' Complexes in Formosa," *BIE* 3 (1957) .89-99.

[210] Ling Shun-sheng, "台灣的航海竹筏及其起源" ("Formosan Sea-going Raft and Its Origin in Ancient China"), *BIE* 1 (1956) .1-23.

[211] Alexander Spoehr, "Time Perspective in Micronesia and Polynesia," *SWJA* 8 (1952) .457-65.

[212] Cf. Wilhelm G. Solheim II, "Oceanian Pottery Manufacture," *Journal of East Asiatic Studies* 1 (1952) 2.1-39.

[213] George F. Carter, "Plants Across the Pacific," *Memoir of the Society for American Archaeology* 9 (1953) .62-71.

[214] George P. Murdock, *Social Structure* (New York, 1949) .349-50; Ward H. Goodenough, "A Problem in Malayo-Polynesian Social Organization," *AA* 57 (1955) .71-83.

[215] P. V. van Stein Callenfels, "The Melansoid Civilizations of Eastern Asia," *Bulletin of the Raffles Museum*, Ser. B, 1 (1936) .41-51; G. H. R. von Koenigswald, "Evidence of a Prehistoric Austromelanesoid Population in Malaya and Indonesia," *SWJA* 8 (1952) .92-96; M. W. F. Tweedie, "The Stone Age in Malaya," *Journal of the Malayan Branch, Royal Asiatic Society* 26 (1953).

[216] Joseph B. Birdsell, "The Problem of the Early Peopling of the Americas as Viewed from Asia," *Papers on the Physical Anthropology of the American Indian* (New York, 1951) .2.

[217] Chang Kwang-chih, "A Working Hypothesis. . . ."

[218] Willard F. Libby, *Radiocarbon Dating* (Chicago, 1955) .93.

[219] H. R. Crane, "University of Michigan Radiocarbon Dates I," *Science* 124 (1956) .8.

[220] Beyer, *op. cit.*

[221] Libby, *op. cit.*, 137.

[222] *Ibid.*, 133.

[223] Chard, *op. cit.*, 9.

[224] *KKTH* (1958) 7.6-16.

[225] *CJA* 8 (1954) .65-94.

[226] Taken from Chang Kwang-chih, "中國新石器時代文化斷代" ("Dating the Neolithic Cultures in China"), *CYYY* 30 (1959) .259-309.

[227] *Ibid.*

[228] Taken from Chang Kwang-chih, "A Working Hypothesis. . . ."